Assistive Technology Resources for Children and Adults with Disabilities

Closing The Gap

Solutions

June / July, 2022
Volume 41 - Number 2

www.closingthegap.com

STAFF

Megan Turek ..... PRESIDENT

Marc Hagen ..... VICE PRESIDENT MANAGING EDITOR

Becky Hagen ..... MEMBERSHIP MANAGER REGISTRATION MANAGER

Callie Kriechbaum ..... SALES MANAGER

INDIVIDUAL SOLUTIONS MEMBERSHIP
Membership Rates
1-yr. $449; 2-yr. $748; Parent $275

GROUP SOLUTIONS MEMBERSHIP
Group options available.

SUPPLEMENTAL COLLEGE CURRICULUM – ELECTRONIC TEXTBOOK
Instructors receive a complimentary one-year membership.

Student Membership
1-yr. $125 Standard

Visit
www.closingthegap.com/membership
for complete details and pricing.

PUBLICATION INFORMATION
Closing The Gap (ISSN: 0886-1935) is published bi monthly in February, April, June, August, October and December.

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

EDITOR'S NOTE
The information provided by Closing The Gap, Inc. in no way serves as an endorsement or guarantee by Closing The Gap, Inc.

@ATClosingTheGap

www.facebook.com/ATClosingTheGap

www.instagram.com/atclosingthegap

contents

volume 41 | number 2

June / July, 2022

Transforming Classrooms:

Supporting AAC Progress Through Comprehensive Literacy Instruction

AMANDA SOPER, M.S., CCC-SLP, specializes in working with individuals with complex communication needs who use AAC systems. Amanda works at a special education school, in EI, and in private practice. She is a coauthor of the blog, AACreATively. She is currently enrolled in a graduate program for Teacher of the Visually Impaired and is an adjunct professor at Gallaudet University.

JILLIAN FRANKEL is a special education teacher at St. Coletta of Greater Washington. Teaching for three years, Jillian is committed to supporting her students' growth in literacy and phonemic skills through AAC. Jillian has been accepted to attend Gallaudet University in the fall of 2022 to earn her MS in Speech Language Pathology.

LI HUAI, M.A., is a special education teacher for a special education charter school in Washington, D.C. Her background in Applied Behavior Analysis (ABA) empowers her to specialize in supporting students with complex needs access to specialized education.

BACK TO CONTENTS

As educators, we constantly advocate for our students and adamantly believe in our students' abilities to learn and progress, but it is essential to put this belief into action and ensure students are given the educational tools to succeed. Access to the AAC device is just the first step, and many educators continue to face barriers in utilizing this equipment to support a student's education once it's obtained. How does the student learn to communicate using this tool? Progress begins with educators (including speech-language pathologists (SLP), occupational therapists (OT), special education teachers, behavior analysts, paraprofessionals, etc.) making a crucial mindset shift. We need to stop asking "how can I teach this student to use their AAC device?" and start asking "how can I support language and literacy development throughout the day using AAC as a tool?"

It's 2022. It's time that everyone in the special education field recognizes that language and literacy are the most functional life skills we can teach our students. For those looking to make that mindset shift, Comprehensive Literacy for All (CLfA) by Drs. Karen Erickson and David Koppenhaver, may be the bible you're looking for. Many programs, including our own, have historically been heavily focused on vocational and life skills. It is important for educators to realize that literacy education is the foundation for all life skills. By underestimating students' abilities in this area, they are being done a major disservice. Literacy fosters independence for our students. Reading skills aid individuals in independently completing daily life tasks including "functional activities" such as reading directions, restaurant menus, transportation schedules, and work schedules, etc. and activities we all take for granted- reading and sending texts/ emails, reading books, selecting music, finding YouTube videos, posting on social media, etc.

Our school transformed educator mindsets through a book study using CLfA. In January 2020, a group of teachers and related service providers came together because they felt that our classrooms and education programming lacked direction. We all felt that we were constantly reinventing the wheel when it came to our daily lessons and interventions. We were a "functional life skills program" and acknowledged that we did "not teach conventional literacy." We used theme-based learning to guide instruction, but we didn't know what to expect our students to learn through that instruction. Teachers and therapists were making engaging theme-based lessons that lacked a specific purpose. Without a cohesive schoolwide plan, teachers were uncertain about what skills to target.

We came together and decided to read one chapter per week of CLfA, meet to discuss the chapter, and determine what changes we could make at our school. Many didn't believe that students with severe disabilities could learn to read. This text gave educators at our school ideas, tools, and the confidence to start teaching students to read, write, and communicate. As we morphed instruction to align with the principles in this book, we began to explore different curriculums including Readtopia, The Tell Me Program, The All Program, and Heggerty. With these tools in hand, our students' successes were the feedback we needed to keep going.

WHERE TO START

Armed with the knowledge from CLfA, we determined which of our students required emergent vs conventional reading instruction and identified the instruction we needed to provide. Beyond the five essential components of reading - fluency, vocab, PA phonics, comprehension - we looked for programs, frameworks, and curriculums to support daily lessons. We also prioritized grant funds to create rich classroom libraries and to purchase needed curriculum materials. With an initial goal to provide at least 90 minutes of literacy instruction per day, we reimagined circle time, added explicit vocabulary instruction, structured shared reading and writing activities, fostered multiple independent reading times, and prioritized PA and phonics instruction.

It shouldn't have to be said, but we'll say it - AAC devices must be available for all students, all day. An AAC device is similar to a child's "voice". Unlike Disney villain Ursula, we want to help students find their voice- not take them away! It is important for educators to problem solve barriers such as uncharged devices, challenging behaviors, and fear of breaking or leaving behind (e.g., on the playground) a very expensive piece of equipment. From here we can begin to support language and literacy development throughout the school day using AAC.

REIMAGINING CIRCLE TIME

Circle time sets the scene for the rest of the day. It's important to use the time to help your students warm-up for the day of learning, touching on the key concepts you want them to take away from the day. While previously a chunk of time used to sing songs, name the days of the week, and the weather, we worked to structure our circle time in a way that centers around literacy learning objectives (Figure 1).

MORNING MESSAGE

Beginning the circle time with a morning message spoken aloud while simultaneously being written by the teacher, students are introduced to concepts of written text and structure as well as learning that thoughts and ideas translate into writing.

QUESTION OF THE DAY

Using visuals and given cloze choices, each student answers an opinion question (e.g., what do you like to do? Sing or Dance?). After each student makes a choice the teacher writes their name, speaking each letter while writing (e.g., Jillian, J – I -L – L – I- A -N, Jillian). This activity reinforces making choices, naming letters, and spelling.

BACK TO CONTENTS

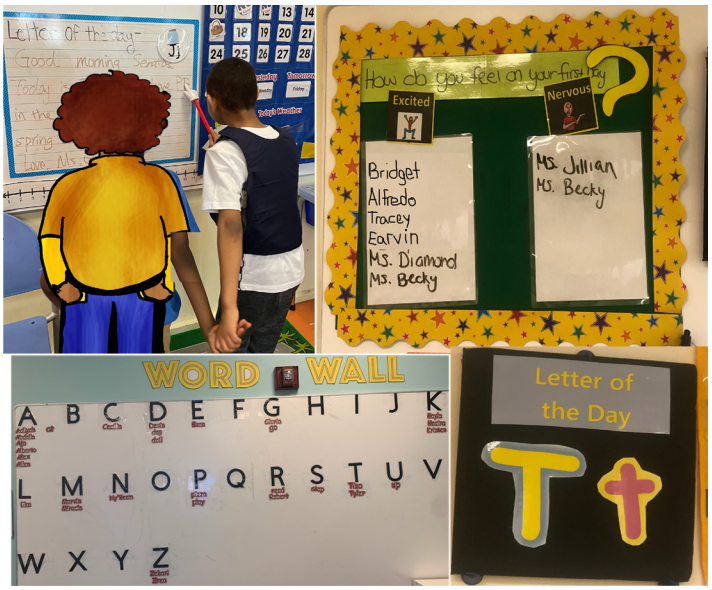


Figure 1: Every classroom has a place to write a morning message, a question of the day visual, word wall, and a letter of the day display. Here you can see a student using a pointer to point to each word in the morning message as he reads it with help from a friend.

WORD OF THE DAY

The word of the day comes from our target biweekly vocabulary list. The teacher leads the students in a "name/word chant" introduced to our program through Dr. Caroline Musselwhite. The chant begins by clapping the syllables of the word, stretching the word, tapping the word from a grid of choices, spelling the word, and cheering the word. After the excitement of the chant, one student assists with finding the first letter of the word and placing it on the classroom word wall.

LETTER OF THE DAY

The last portion of the circle time is the letter of the day. Rather than the all too common practice of "letter of the week", letter of the day allows for increased exposure to all letters of the alphabet. A six part letter cycle based on common letters in students name, alphabetical order, letter name/letter sound relationship, letter frequency, and similarity of visual features is used to determine the letters used throughout the school year (Jones et al., 2012).

During the letter of the day students should be exposed to both uppercase and lowercase letters, having an opportunity to practice saying the letter name and sound it represents a minimum of six times. It is important that students do not feel obligated to answer. Similarly to the vocabulary section, a fun routine letter chant can invite students to join in naming the letter and sound without pressuring them to participate. Students are often encouraged to use their "inner-voice" giving them the option to participate silently. This activity is about exposure and fun and it is important to avoid "testing" your students.

Many students enjoy the following scripted letter of the day chant:

Teacher: Let's name the letter together. Remember you can say it out loud using your mouth or device, or you can use your inner voice and say it in your head

Say it Loud [insert letter]
Say it soft [insert letter]
Say it slow [insert letter]
Say it fast [insert letter]
Say it high [insert letter]
Say it low [insert letter]

Chants like this offer repetition with variety and the comforting predictability of knowing what comes next.

A similar activity can be used for letter sounds using actions since some sounds can be difficult to stretch or raise in pitch (e.g. jump with your sound, wiggle with your sound, stomp with your sound, etc.)

Letter of the day begins in circle time but remains a part of the conversation all day long. Encourage students to look for the letter throughout the day and listen for the sound it represents. The more it is pointed out, the more students will retain the target letter.

These different activities comprise a hands-on, high energy start to the morning that gets students moving and ready for a day of learning literacy concepts. Before the clock has struck 9:30, students have already practiced key concepts including text structure, letter Identification, vocabulary, and one to one letter-sound correspondence. Inspired by the CLfA text, our circle time was given purpose, allowing for a productive start before any chaos has time to take hold.

VOCABULARY AND LANGUAGE INSTRUCTION

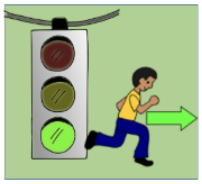
While "core word of the day" or "core word of the week" are popular strategies, we use our own unique, multilayered vocabulary approach. This uses 1) general biweekly core vocabulary targets and 2) activity-specific core vocabulary. Universal tools are used to support instruction, such as large AAC posters, access to AAC systems on an interactive tv, laminated "Word Maps," and other visuals.

Using the Tell Me Program, every two weeks, we have a new theme and related text. In the first approach, we choose eight to ten core words that help students read and talk about the book. We provide explicit vocabulary instruction for each of these words. In approach two, we review target vocabulary that relates to specific activities. For example, if we are playing with an ice cream set, we will review words such as "mine, yours, make, yum, cold" but if we are making play-doh, we will review words such as "help, make, soft, play, put in."

In approach one, teachers provide explicit vocabulary instruction for students during literacy activities using a four-step

BACK TO CONTENTS

Explicit Vocabulary Instruction



1.Target vocabulary "go"

2.Look for "go" on AAC devices

I go swimming.

3. "go" in different contexts

I go home.

"go" in different contexts

I go shopping.

"go" in different contexts

4.Students practice "go" throughout school day

Figure 2: This visual reminds teachers of the steps in explicit vocabulary instruction. These include introducing the target word, teacher models and students practice saying the target word on AAC devices, the teacher models the target word in a variety of contexts, and students practice using the word throughout the school day.

Incorporate AAC Symbols and Print into Daily Routines and All Activities

- Arrivals & Departures (e.g., "Hi" "here" "put in" "where go")

- Personal Care (e.g., "turn" "put on" "put in" "you help"

- Mealtime (e.g., "want" "not like" " I need" "open it" "look good")

- Play & Leisure (e.g., "my turn" "wait" "want different" "go up" "look here" "I like")

Figure 3: Teachers post this poster in their classroom to remind everyone to model AAC throughout the day.

BACK TO CONTENTS

instructional sequence (Figure 2). This is typically completed at the start of The Tell Me Program's shared/ guided reading lesson. Students are provided with at least 30 seconds of wait time to process and respond during explicit vocabulary instruction. This has proven to be a critical element as it often provides our students with the time they need to be independent.

Step 1: The teacher shows (e.g., written word and picture symbol) and tells the student the target word.

Step 2: The teacher models where to say the target word on student AAC devices.

Step 3: The teacher shows students how they can use the words in various contexts.

Step 4: The students practice saying the word on their AAC device, and the teacher encourages students to use the target vocabulary words throughout the day in a variety of activities (Figure 3)

In approach two, teachers are purposeful when choosing target words to model. While writing lesson plans, teachers will list when and how to model this vocabulary on student AAC devices. For example, when we want to teach students the core word "see," we may flag opportunities in the lesson plan. For instance, each time we see the sentence "I see ___," we can hold up our laminated copy of the symbol "see" and model the word on student AAC devices. Have you ever had that awkward moment when you try to model but can't remember where the word is on the device?! We have! So, we made "Word Maps" (Figure 4) which provide a visual of the icon pathway for each language system found in the classroom. This helps both students and teachers quickly locate words on their specific devices.

A combination of both approaches has helped students not only to significantly increase their vocabulary, but also to begin using those words in a variety of contexts and sentence structures.

READING

SHARED READING

Shared reading is so much more than solely reading books to students and asking questions. It promotes students' language and literacy skills through the interactions that occur between educators and students while reading together. It provides educators opportunities to communicate with their students by labeling objects in the illustrations, making real-life connections, and referring to print. CLfA lists various strategies for educators to guide and encourage students during shared reading. The **CAR** strategy is the primary way we facilitate students' interactions and language development. **CAR** is an acronym for these three steps:

1. **C**omment and wait.
2. **A**sk for participation and wait.
3. **R**espond by adding a little more.

It is strongly recommended that educators pause and wait quietly between each step. For example, educators can make a simple comment to gain students' attention after reading a small segment of a story and wait for the students to respond.

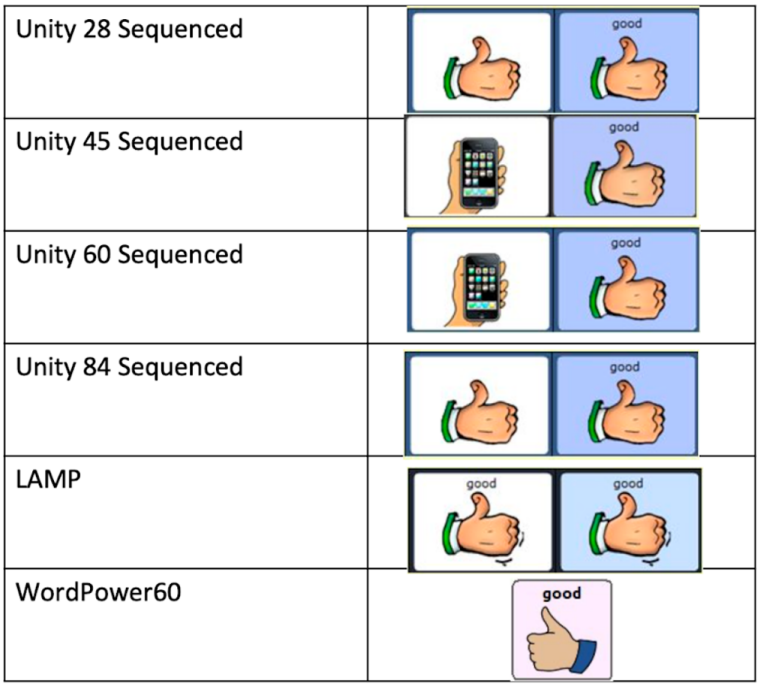


Figure 4: An example of a "word map" which shows the icon sequence needed to say the target word on a variety of AAC systems.

BACK TO CONTENTS

Figure 5: This CAR strategy poster is featured in our classroom libraries. Here you can see two SLPs reading with students and modeling on their AAC devices.

If the student responds (e.g., "Cat bed"), then the educator can repeat the student's response and add a little more (e.g., "Cat is under the bed."). CAR gives educators specific guidance to engage students with disabilities during shared reading by making comments instead of demanding students to ask/answer questions. (Figure 5)

Our school uses the Tell Me program to focus on reading comprehension and vocabulary instruction. The Tell Me program is a 10-day structured learning sequence connected to one book. Though the program provides scripted lessons for eleven books, teachers can continue it using carefully selected books with predictable pictures or text. Every day, instruction involves:

1. Singing a theme-related song
2. Teaching specific vocabulary words
3. Using vocabulary and language to participate in dramatic play
4. Reading for a variety of purposes
5. Participating in predictable chart writing
6. Answering simple questions

We created a 11" by 17" visual support book (Figure 6) of graphic organizers to support the program. The flipbook includes visual cues of the song lyrics, picture symbols of core words, and graphic organizers to ensure students read for a variety of purposes (e.g., "who," "where", "what" posters, story maps , "event sequences".) The flipbook has been one of our great successes in supporting text comprehension.

INDEPENDENT READING

Students' reading should continue to occur outside of structured literacy instruction- frequently. Establishing an inviting reading environment is the key to fostering and encouraging a love of reading in students. But how do we set up this reading-rich environment?

It is essential to provide students an exciting and accessible collection of reading materials. Classroom libraries should invite and encourage students to read. Books are traditionally overemphasized, and other formats of reading materials are overlooked. Thus, reading materials such as magazines and newspapers, music and rap lyrics, and other digital readings are precious materials in the classroom library. Materials should meet Individual needs for different reading level.

Let's also not forget the adapted books. Adapted books include appropriate multisensory features to increase students' engagement. Adapted books can be adapted in various ways to meet students' individual needs. For example, students with vision impairments may need adapted text (e.g., enlarged font, high contrast font such as red and yellow on black backgrounds) and adapted images (e.g., textures or tactile symbols, enlarged visuals, visuals with reduced background clutter, salient feature outlined in images). Interactive ways to engage students include laminated and Velcro images that can be attached to books and moved around and adapted E-books with inserted sounds and animations. With various reading materials ready, accompanied by a quiet reading corner with beanbags, blankets, and stuffed toys, it's time for students to explore and experience the joy of reading.

BACK TO CONTENTS

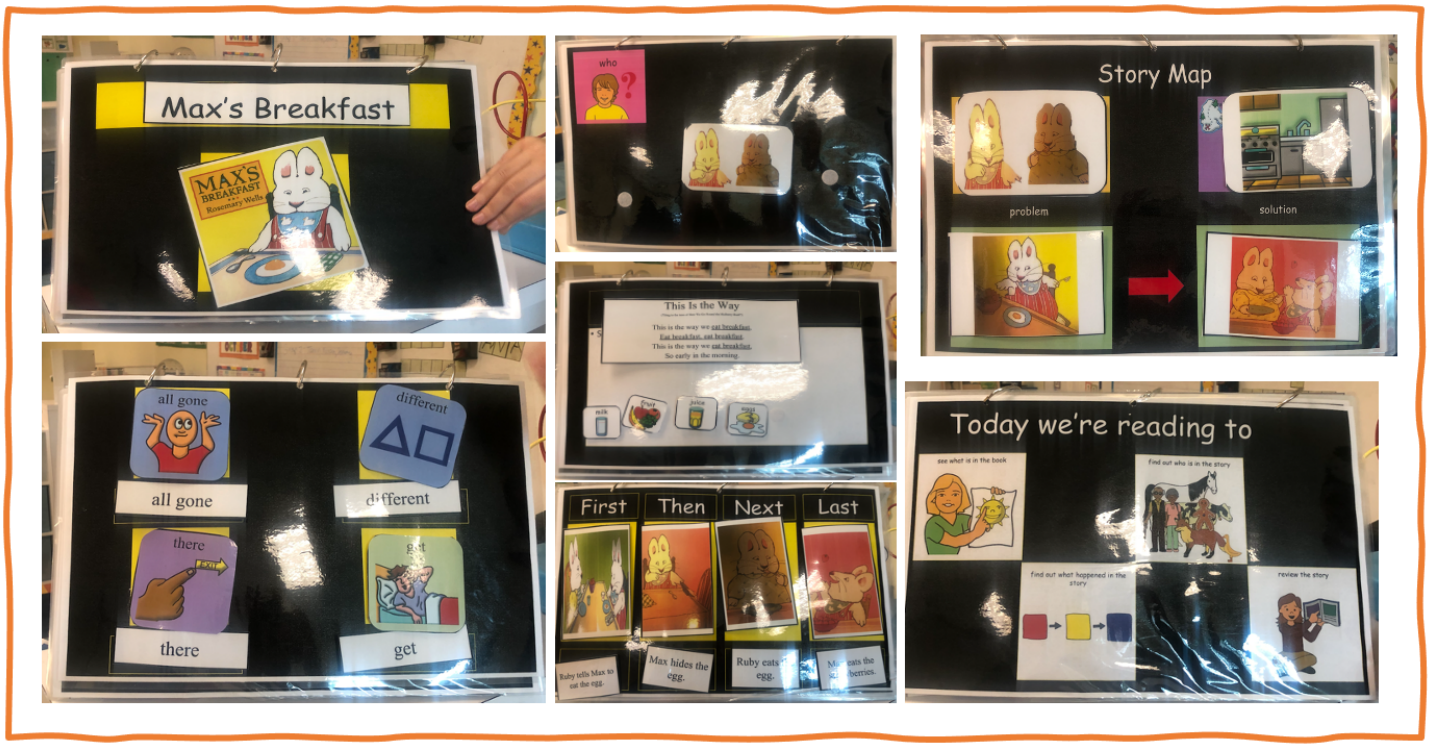


Figure 6: This custom 11" by 17" visual support flip book contains graphic organizers that support lessons from the Tell Me Program. Our flip book is mounted on an acrylic stand with holes drilled through at the top to accommodate binder rings.

WRITING

Before revising the focus of our educational program, writing in the classroom was almost nonexistent. Occasionally teachers ran activities, completing sentence strips using picture choices chosen by the teacher prior to the activity, but there was little encouragement for students to put original thoughts to paper, arguably the most empowering skill we can pass on to our students.

INDEPENDENT WRITING

Independent writing can feel like an intimidating concept to teach. "How can I teach independent writing to a student who doesn't yet know their letters or know how to form them on the page?" When you think of a typically developing child learning to write, they do not begin writing sentences, words, or even recognizable letters. Often it begins with a scribble, then perhaps random letters strung together, and eventually words and sentences are created. When teaching students with emergent writing skills independent writing, focus on those first two steps: scribbling and random strings of letters. Students should be encouraged to explore writing implements, this is the first step to expressing oneself on paper. Knowing not all students have the physical capabilities to pick up a pencil and start scribbling, alternative pencils (Figure 7) offer a solution to this problem. An alternative pencil is a tool that allows students to select letters using eye gaze, partner assisted scanning or pointing which a partner then scribes. Many of our students use

Keyboard on AAC device	
Flip Book	
Keyboard	
Eye gaze accessible	

Figure 7: Students can use a variety of alternative pencils including the keyboard on their AAC devices, flip books, keyboards, eye gaze accessible flip books, etc.

BACK TO CONTENTS

a keyboard on their AAC device as an alternative pencil.

A successful independent writing activity includes presenting students with a familiar picture (e.g., a photo of the student or a preferred fictional character) and asking them to write about it. Many of our students use alternative pencils to write. After the student has finished writing, educators look for letters that could be associated with the picture. For example, if the photo provided to the student is of them holding a butterfly in a jar, and they select the letter "b" the teacher can point out "I see you wrote the letter B. B is for butterfly. I think you were talking about the butterfly. Let me show you how I write "butterfly"" This will help students begin to make associations between the letters they choose and the pictures they are looking at. The more this activity was conducted in our classrooms, students began to more meaningfully select letters and some students demonstrated an emerging ability to use phonetic spelling.

SHARED WRITING

Shared writing works to build confidence in students' writing. Students are exposed to structural features of text as well as encouraged to put their own thoughts to paper. These steps can be combined or split apart into as many lessons as works for the individual classroom, but each one must be completed for the writing cycle to be effective. Below is an example of a potential breakdown.

DAY 1

Step 1: Brainstorm

Begin by providing background knowledge on the topic students will be writing about using a short clip or reading a book. Introduce the sentence stem which should be three to four words that students will find familiar (e.g., I can _____). Brainstorm potential choices and invite students to share their own ideas using AAC. If students don't volunteer an answer, continue to the next step, remember you are inviting, not demanding!

Step 2: Complete the sentence

Model completing the sentence-stem yourself, then ask another adult or aide in the room to model one to two more. After providing models, give each student a turn to complete their sentence. Invite students to form original ideas by giving them an opportunity to dictate an answer using their AAC device. If students need a bit more support, have a choice board nearby for students to use to make choices by either eye-gaze, partner assisted scanning, or pointing. If a student comes up with an original answer, whether the answer makes grammatical sense or fits contextually in the sentence does not matter. Celebrate their originality by writing whatever they have dictated to you - it's their writing! (Figure 8)

Step 3: Highlight one element of text

Choral read the text, pointing to each word as you read.

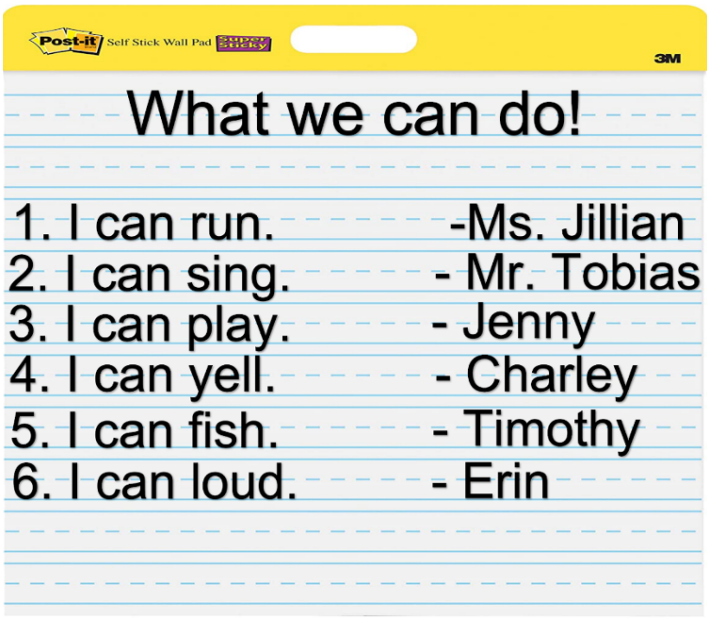


Figure 8: An example of predictable chart writing with the sentence stem "I can__."

Choose an element of text to focus on identifying. For example, you might choose to look for a common letter or letter sound as you read, or look for grammar markers (e.g., punctuation, uppercase letters).

DAY 2

Step 1: Reread the sentences

Revisit the chart by rereading students' sentences. Make it fun by letting students choose how they would like their sentence to be read (e.g. slow, fast, loud, high, low, sung, etc.). If appropriate, give students a chance to read their own sentence!

Step 2: Cut the sentence into words

The purpose of this next step is to demonstrate the concept "sentences are made out of words." Write each students' sentence on a sentence strip and provide them an opportunity to cut each word in the sentence. Let students make mistakes. If they cut in-between a word, take a moment to talk about it, and correct it together. Once students have cut up their sentence they can take turns ordering the words of their sentence in a pocket chart.

DAY 3

Step 1: Reread the sentences

Step 2: Sentence Scramble

We love to use sentence scrambles to work on grammar and syntax. Give students their words out of order and have them build the sentence in the correct order. Allow students to make mistakes! Make corrections as needed using think alouds. This helps our students hear and identify when something sounds grammatically correct. We have also seen students begin to use

BACK TO CONTENTS

more syntactically correct language using AAC following this instruction.

Step 3: Be the sentence

This next activity makes the sentence scramble that much more hands on. In this activity each student is given a word in the sentence. Students work together to put themselves in the correct order to make the original sentence. Once in order, the teacher should restate the original sentence, and then have each student hold up their word as you check the order as a class, rearranging as necessary.

DAY 4

Step 1: Reread the sentence chart

Step 2: Read class book

Students help make a class book by drawing or choosing their own pictures to illustrate their sentence. Students often enjoy when their photo or face is placed within an image! For example, in the sentence above "I can fish" you might put a photo of the student's face on the body of a fisherman holding a big catch you found on Google. (Don't be surprised if you enjoy this part of the lesson even more than the kids.) Read the book to students and place it in the classroom library. Students are often drawn to these books, as they have pictures of their friends, and they are proud of the writing they have created!

An important thing to highlight about these activities is they become easier the more you do them. There is a learning curve for both students and teachers as you both get used to the routine of the activities, so don't be discouraged if the lesson doesn't go smoothly the first few times. When beginning you may need to break these into smaller lessons, as the activities often take more time when students are first learning the routine. Later they can be combined when the different portions begin to go faster due to students settling into the predictability of the writing cycle.

PHONEMIC AWARENESS

As our school began to adopt the literacy framework outlined in CLfA, determining how we would teach PA and phonics was our biggest challenge. Over the years we have had many students with IEP goals related to letter names, letter-sound correspondences, and simple decoding/ encoding strategies. However, we have had few students make the progress we know they can make. We vowed to stop trying to reinvent the wheel. We turned to research and looked back on our own past instructional practices that succeeded.

Phonemic awareness, the ability to manipulate sounds, includes isolating, blending, segmenting, adding, deleting, and substituting. For many educators, the idea of teaching non-speaking students how to manipulate sounds is daunting and can feel unattainable. However, the research is clear; **students need systematic, explicit instruction in PA.** The National Reading Panel (NRP) concluded that

1. all students, including students with disabilities, benefit from PA and phonics instruction
2. systematic phonics instruction provides the greatest instructional benefit for learning to read
3. students respond best when instruction is presented in

Program/ Curriculum	What do educators do?	How do students participate?
Enhanced Alphabet Knowledge Instruction	Educators use the letter of the day script outlined in Jones et. al. (2012)	Verbal speech AAC devices Inner voice
Heggerty Phonemic Awareness Curriculum	Using a script, educators lead a 10–15-minute lesson using this curriculum. It works on the following skills in **every** lesson: rhyming, onset fluency, blending, final or medial sounds, segmenting, adding, deleting, substituting, letter naming, and language awareness.	Verbal speech Gestures AAC devices Inner voice
Accessible Literacy Learning Program	Educators focus on two to four skills at a time in individual or small group instruction. Given scripts, educators use direct instruction to teach sound blending, phoneme segmentation, letter-sound correspondences, decoding, sight word recognition, and shared reading.	Verbal speech AAC devices Letter tiles Picture symbols in a field of four
Making Words	Educators use a hands-on approach to teach students to manipulate sounds by changing, adding, moving, and deleting letters. They follow instructional scripts working from beginning phonics patterns to more complex patterns.	Letter tiles

Figure 9: This chart share four literacy programs and curriculums used by our school for alphabet awareness and phonemic awareness lessons.

an age-appropriate and **engaging** manner

4. teaching with letters helps students understand how to apply their PA skills to reading and writing
5. no single approach to phonics can be used for **all** students so teachers must know a variety of approaches and understand how to tailor those approaches to different groups of students.

It was time to take this daunting task and break it down into manageable pieces that would lead to student success. In September of 2019, we had piloted the Accessible Literacy Learning (ALL) Program, developed by Drs. Janice Light and David McNaughton, with seven non-speaking students who use AAC ranging from ages nine-17. Within a month, we saw students - who for years made little to no progress with IEP goals in this area – understanding and manipulating letter sounds. Inspired, we used this as a foundation to grow our PA and phonics instruction using a variety of tools and strategies. Our educators now use Enhanced Alphabet Knowledge Instruction (e.g., letter of the day), the Heggerty Phonemic Awareness Curriculum, the ALL Program, Making Words, and other assorted engaging instructional strategies that are not necessarily part of a full program/ curriculum.

Given programs and curriculums (Figure 9), our educators now have time to personalize materials for students. This provides a personal connection to the curriculum - anchoring new skills to familiar topics, encourages cognitive engagement, and builds cognitive clarity. And not surprisingly – we have already seen several students move from emergent to conventional literacy learners!

CONCLUSION

We have been implementing these different strategies since September 2020. We truly see students making incredible progress in their literacy skills. We know we need to provide structure and literacy activities to support our students in their process - and now we have the materials to make it possible (e.g, lesson plans, material, curriculum, programs, etc.). For those that didn't believe that students with severe disabilities could learn to read and write … now they know these students can do it! Best of all, we no longer hear "how can I teach my students to use their AAC device?," Instead we see students' communication and language skills flourishing through AAC, inspiring the question, "what can they learn next?" ■

BACK TO CONTENTS

Identifying and Reducing the Impact of Indirect Factors that Cause Distress for People with Complex Communication Needs

People with complex communication needs may be unable to communicate why they are distressed. Their responses may appear out of the blue, extreme given the situation, have no apparent pattern, or be a change from how they typically respond. This article outlines a process to help identify triggers and indirect factors impacting an individual, recognize and respond to earlier signs of distress, determine the communicative intent underlying their response, and tailor strategies to support their needs.

"Beneath every behaviour is a feeling. And beneath every feeling is a need. And when we meet that need rather than focus on the behaviour, we begin to deal with the cause, not the symptom."

-Ashleigh Warner

As clinicians and caregivers, sometimes our clients or children with complex communication needs are in distress and cannot communicate why. The reason behind their distress may be evident because there is a clear indicator or trigger that occurs immediately prior (e.g., not sleeping well and then refusing to get out of bed). At other times, the response appears out of the blue, is extreme given the situation, has no apparent pattern, or is a change from their typical response. In these situations, the reason for their distress is unclear because the conditions linked to their responses are removed from the situation, but set the chain in motion. These factors influence the person indirectly (e.g., not sleeping well, being woken up to go to school, and then fighting with a peer). The person has no clear way of transparently communicating what is happening to them, and we do not know how to support the person effectively. All parties are left feeling helpless and unsuccessful.

Let us consider the following example. You are celebrating your birthday with friends at your favourite restaurant. It has been a long work week, but you are looking forward to seeing everyone. When you arrive, you find out the restaurant lost your reservation, so you need to wait for a table. While waiting in the crowded doorway, you receive a text from two friends letting you

TRISH LAWRIE is a Registered Speech-Language Pathologist and co-owner of Achievements Unlimited Therapy Services. For the past 25 years she has been working with children with complex communication needs in a variety of settings as a member of a trans disciplinary team. She is committed to life-long learning and truly enjoys helping others improve their communication abilities.

ERIN DIANA is a Registered Psychologist and co-owner of Achievements Unlimited Therapy Services. Over the past 20 years, she has worked to support children and youth with various disabilities in many capacities and settings. Using a trans-disciplinary approach, Erin continually strives to expand her knowledge to ensure exceptional quality, individualized and trauma-informed therapy. As well, she is very passionate about mentoring parents, staff, and therapists.

BACK TO CONTENTS

know that they got last-minute tickets to the hockey game and cannot make dinner. Thirty minutes later, you are finally seated, and you wait another fifteen minutes before the server takes the drink order. The server then rushes away before taking a food order. You look around and other tables that were seated at the same time as you already have drinks and appetizers. When the server returns with your beverages you are visibly upset. You tell them that they should have taken the food order already, that they are terrible at their job, you will not be leaving a tip, and you will be complaining about them to the manager.

Often, both a direct trigger and one or more indirect factors affect one's emotions and responses, but only the trigger is recognized. For example, the server was shocked by your reaction. They were unaware of the situation and believed that you were irrationally upset because they had not taken your food and drink order simultaneously (i.e., the trigger). They did not know about the events leading up to your outburst that made your response appear out of proportion (i.e., the indirect factors). These factors were internal (e.g., being tired, hungry, stressed) and external (e.g., lost reservation, waiting for a table in a crowded space, friends cancelling, waiting to place your order, and others seated at the same time already eating and drinking).

These situations can be mitigated. For example, after recognizing how the server and your friends have perceived your response, you head off to the washroom and take a moment to yourself to reflect on why you reacted the way you did. You return to the table and share the events leading up to your outburst with your friends. They empathize with you and validate your feelings and response. You call the server back and apologize, providing them with a brief explanation, and they too are understanding and apologetic. Without even consciously being aware, you have many options to manage the situation in almost any way you want to. You could go home to rest from your difficult evening, talk about your hurt feelings to your friends who cancelled, speak to the manager about the lost reservation, leave the restaurant to go somewhere else, write a bad review, among many other things.

Unless you explicitly communicate the impact that indirect factors have on you in situations like the one above, it is hard for others to make sense of your response. A person with complex communication needs may be unable to communicate their needs, wants, or frustrations or explain why they reacted in particular way. Without a clear understanding of these factors, clinicians and caregivers will be ineffective advocates and not have the ability to help the person resolve the issue, advocate for themselves, and/or change their circumstances with help or independently. The following is a five-step process that we use to develop a support plan to mitigate the impact of indirect factors on an individual.

STEP 1:

The first step is to identify signs of distress. We do this by recognizing the individual's verbal and non verbal signs of distress. Distress is extreme anxiety, sorrow, or pain. It may be a change from a person's typical response to a given situation, withdrawal, emotional outbursts, physical aggression, self-injury, damaging property, and other possible reactions. These signs may not be recognized as distress and ignored, dismissed, or identified as problematic behaviour. Strategies such as punishment that successfully reduce or stop the person from engaging in these responses are highly detrimental and may eliminate the individual's only means of communicating their distress..

STEP 2:

The second step is to identify and eliminate or reduce known triggers. We observe the individual and consult with their caregivers to determine what causes the person to become upset and then eliminate or mitigate these triggers as best possible. In addition, we validate their feelings by responding with kindness, empathy, compassion, understanding, and concern, even when we do not know why a person is in distress. Validation means that we care about and acknowledge the person, their emotions, thoughts, experiences, values, and beliefs. Be honest when you do not understand why the individual is struggling while being open and curious about their feelings. Even when someone does not understand the spoken words, they can tell by our non verbal indicators that we are listening to what they are communicating, which always improves the situation.

STEP 3:

The third step is to identify potential indirect factors causing distress. Identify all relevant events or conditions that may contribute to the client's distress using the Potential Indirect Factors List in Chart 1. Note, that all indirect factors may also be direct triggers for a person's response depending on the situation.

POTENTIAL INDIRECT FACTORS LIST (CHART 1)

- Chronic illness (e.g., seizures, allergies, diabetes)
- Mental illness (e.g., anxiety disorder, bipolar disorder, schizophrenia)
- Illness or pain (e.g., showing signs of or complaining of: (e.g., constipation, headache, injury)
- Medications (e.g., new, missed, changes, side effects)
- Sleep (e.g., poor sleep, sleeping out of the home, changes in routine, disturbances)
- Mealtimes (e.g., changed time, missed, hungry, thirsty)
- Habits (e.g., not enough exercise, screen time - transitions away, too much, inappropriate content)
- Known or suspected trauma (e.g., loss of loved one, family divorce/discord, abuse)

BACK TO CONTENTS

- Known or suspected fears (e.g., dogs, dentist, hair cuts)
- Specific disability (specify)
- Learning difficulties (specify)
- Executive functioning challenges (e.g., poor organization or planning skills, poor impulse control, and focus, and low frustration tolerance)
- Emotions (e.g., anger, sad, anxious, irritable)
- Specific sensory needs (e.g., requires a sensory diet)
- Sensitivities (e.g., hyper or hypo sensitivities to light, sound, food, touch)
- Environment (e.g., crowded conditions, noise level, temperature)
- Significant life changes (e.g., change in school placement or living arrangements, new sibling, pet, home)
- Experienced disappointment (specify)
- Refused a desired object or activity / denied a request
- Disciplined or reprimanded, especially if not a response this person is used to
- Shared attention (e.g., with another person, when a caregiver is busy - on the phone or doing chores)
- Fought, argued or had other negative interaction
- Difficulty with peers (e.g., being left out, conflict, bullying)
- Transitions (e.g., leaving a preferred location or activity, going to a lesser preferred activity or location, not understanding the transitions)
- Change in routine (e.g., routine altered, change in activity or order, disrupted, expected activity cancelled, being late for an activity)
- Specific people (e.g., interactions with certain individuals, change in caregiver or teacher, absence of preferred caregiver or teacher)
- Specific activities at school (e.g., music, academic classes, physical education, group instruction, independent seat work, specific curriculum)
- Specific activities at home (e.g., daily living routines independent leisure, chores)
- Times of the day at school (e.g., arrival to school, morning classes, lunch, recess, afternoon classes)
- Times of the day at home (e.g., waking up, breakfast, homework, bedtime)

STEP 4:

In step 4, we track indirect factors daily. We do this by transferring the indirect factors impacting the client from the Potential Indirect Factors List onto the Daily Checklist (see Chart 2). This checklist is completed in all environments and shared with relevant parties. Rate the person's overall distress level on each day (frequent, some, occasional or no distress). Mark all indirect factors that may be impacting the person. Write a brief note with any pertinent information. As we identify new factors or as circumstances change, update the checklist to reflect this. Once the indirect factors are known, continuing to use this form because it serves as a reminder of the challenges the person faces that we may otherwise miss and therefore not recognize or acknowledge.

INDIRECT FACTORS DAILY CHECKLIST (CHART 2)

Name of client: Environment:						
Date:						
Child's overall state: + ~ -						

+ frequent distress ~ some distress - occasional or no distress

Date/Note: _____

_____

STEP 5:

For step five, we create a support plan to eliminate or reduce the impact of indirect factors on the individual. (Chart 3). For each indirect factor we will look at the following five details. First, describe what you believe may be challenging for the person. Second, describe their signs of distress. Third, using information, make the best guess about what the client is trying to communicate or what their unmet need is. There may be more than one message conveyed, which will likely become more apparent over time. Fourth, support the client with having their needs met. Reduce or eliminate indirect factors as best possible. Validate the person's feelings when they occur regardless of the person's response (e.g., whether they respond with aggression or do not appear to be bothered by the indirect factor). Specific strategies are then tailored based on the individual's needs and abilities. Each area can be updated and refined as new factors arise or are recognized and we obtain more information. Fifth, look for earlier signs of distress that are less severe and occur before the more exaggerated responses (e.g., rubbing eyes before hitting someone when tired). Respond to their signs of distress at the earliest indicator to prevent the client from needing to become very upset. Initially, these precursors may look the same for many situations, but overtime you may notice subtle differences.

Implementing these strategies should minimize the person's need to intensify their reaction to feel understood or give up trying and put them in a better place to develop skills to advocate for themselves as independently as possible. Share this information with all caregivers and clinicians working with the person.

INDIRECT FACTORS IMPACTING THE CLIENT SUPPORT PLAN (CHART3)

Client:		Date:		
Strategies for all indirect factors: Reduce or eliminate the indirect factors as best possible Validate the client's feelings when they do happen regardless of their response (i.e., even when they do not appear to be bothered by it at the moment) Respond to their signs of distress at the earliest indicator. Share with all caregivers and clinicians working with the client. Model using individual's communication mode. **Earlier signs seen for all/most indirect factors:**.				
Indirect Factors What is challenging	Signs of distress	Probable or Known Commicvative Intent	Strategies to meet their needs	Early Signs

The following is an example of how understanding how the impact of indirect factors helped support one of our clients. Ben is a 13-year-old Autistic boy who lives at home with his mother and stepfather. He spends a couple of nights each week at his dad's house. Ben is over six feet tall and close to 300 pounds. He loves dinosaurs, pop music videos, and snack food and enjoys sensory-based back and forth exchanges such as head rubs, deep pressure pats, dancing, and jumping on the trampoline. Ben participates in simple turn-taking games (e.g., Pop Up Pirate), follows simple instructions with visual cues, communicates by pointing to items or leading people to what he wants, and completes many self-care tasks and chores with supervision and minimal support once demonstrated. Upon starting services with Ben, he was typically in a good mood and happy to see us but at some point during sessions he would become extremely aggressive. Parents reported that he was often aggressive with them and at school at various points throughout his day. Sometimes, the distress had apparent triggers, such as someone touching one of his toy dinosaurs. Still, often he would appear happy for one moment and then lash out unexpectedly, without a clear indicator of why he was upset. These behavioural outbursts tended to occur in clusters and included pushing, punching, and holding people aggressively against the wall. In one situation, he sprained a staff member's back. Staff were afraid to work with him, and they always worked in pairs for everyone's safety. There were indirect factors that were obvious and would lead to Ben's dysregulation and lower frustration tolerance. The more factors present, the more distressed Ben would become. However, there were other factors that were not obvious.

INDIRECT FACTORS DAILY CHECKLIST - BEN EXAMPLE

Name of client: Ben Environment: Home							
Date: April	5	6	7	8	9	12	13
Child's overall State: + ~ -	-	~	~	+	+	-	~
Transition between parent's homes - slept at dad's last night	X					X	
Ate take out food	X	X				X	
Stepfather put Ben to bed							X
Aide present	MK/AT	MK/ES	MK/ES	ST/AT	ST/AT	MK/ES	MK/AT
Therapists in session with the aide		OT					SLP
Perceived denied requests: hunger and thirst			X	X			
Perceived denied requests: Wanting to end an activity or get a new toy or activity			X		X	X	
Perceived denied requests: Washroom			X	X		X	X

+ frequent distress ~ some distress - occasional or no distress

Note: *April 5 - (MK) Challenging day. Ben stayed at his dad's last night. The school reported that he was very agitated in the morning and refused to participate in any classroom tasks. They said the afternoon was better, but he was upset for most of his home session.*

Note: *April 6 - (OT) Ok day. Ben is very thirsty today. MK reported he drank four 500ml water bottles before school, four more after school, and used the washroom hourly. OT in session today. All talking occurred outside the room, and Ben didn't become aggressive while she was there. Every time Ben stands up, he either goes to the door to the bathroom or the kitchen or goes to get one of his preferred items. I realized that he would become aggressive if I asked him what he was doing or was in front of whatever he was*

BACK TO CONTENTS

trying to get. We know denied requests are challenging for him. I don't typically deny him, but sometimes he thinks I am. Continue tracking perceived denied requests on the form - when he tries to get food, water, a new toy or activity, or the washroom.

***Note:** April 7 (MK) Ok day. Ben is very thirsty again today and drank eight bottles of water and went to the bathroom hourly. Looking over data from the last month, as suspected, increased water intake and bathroom breaks occur the day after he has eaten takeout food.*

INDIRECT FACTORS IMPACTING THE CLIENT SUPPORT PLAN - BEN EXAMPLE

Client: Ben — Date: April 20, 2022

Strategies for all indirect factors:
Reduce or eliminate the indirect factors as best possible
Validate the client's feelings when they do happen regardless of their response (i.e., even when they do not appear to be bothered by it at the moment)
Respond to their signs of distress at the earliest indicator.
Share with all caregivers and clinicians working with the client.
Model on AAC device.

Earlier signs for all/most indirect factors:
Refusing to participate in preferred activities
Rejecting offers to engage
Flicking his wrist in a rhythmic pattern
Pushing our hands away

Indirect Factors (what is challenging)	Signs of Distress	Probable or Known Communicative Intent	Strategies to meet their needs	Earlier signs
The transition between mom and dad's house - sleeping at dad's house the night before	Has challenging time transitioning between his parents' homes. He can become aggressive when the opposite parent comes to pick him up at school. When he spends the night at his dad's house, he is typically more aggressive the next day at school and at his mom's house. He often appears tired the following day and tends to cling to his mom.	"I miss my mom" "I am tired" "I have a hard time not sleeping in my bed at mom's house"	The day after Ben slept at dad's house, we ensured he had time with his mom prior to therapy sessions, the environment was quiet, calmer activities were selected, and Ben had more time alone with his iPad.	See earlier signs above Rubbing his eyes Clinging to his mom
Eating take out food the day before	The day after Ben had fast food he goes to the bathroom more frequently and drinks a lot of water.	"I need to use the washroom" "I need something to drink"	Water bottles are always visibly present. When Ben stands up, we immediately move out of his way so he can go to the fridge. Recommended parents go to his paediatrician (determined he is diabetic). Parents reduced the frequency Ben has fast food.	He initially stood up often without a clear indication as to why. Now he will stand up and either go to the bathroom or lead us to where the families keep the water bottles.
Stepdad put Ben to bed	On the nights that Ben's stepfather put him to bed, he watched music videos on his iPad until he fell asleep 2-3 hours later and was always tired the next day.	"I'm tired" "I don't want to do that"	Ben's stepfather followed the same routine as his mom (i.e., iPad for 30 minutes at bedtime).	See earlier signs above.

Indirect Factors (what is challenging)	Signs of Distress)	Probable or Known Communicative Intent	Strategies to meet their needs)	Earlier signs)
Specific aide present	Ben engaged in significantly more aggression towards one of his aides who was new to using social engagement strategies.	"You are not fun" "I don't want to do that" "I want (other aide) to be here"	See precursors above. Provided more training on social engagement to all staff and parents. Add language and model on AAC Device	See earlier signs above.
Therapists in session with the aide	Ben was more likely to be triggered during sessions when the aide and the apists were both in the room with him. This appeared to happen because there was more talking and less individual attention given to him.	"I don't like when you talk" "Play with me"	Therapists ensured that all conversations occurred away from Ben. The therapists and aides directed their attention to Ben when in the same room as him. Add language and model on AAC device.	See earlier signs above.
Perceived denied requests: hunger and thirst	When Ben is hungry or thirsty, unless food or drink items are present, he cannot ask for them. He will sometimes lead someone to a location (e.g., to the fridge). When he is hungry or thirsty, our known indicator is physical aggression. Ben may be making multiple attempts to request food or drinks that we are missing or not understanding.	We ensured that food and drinks were available in Ben's immediate environment.	See above (i.e., fast food). Water bottles are always visibly present. When Ben stands up, we immediately move out of his way. Personalized food page on his device.	He initially stood up often without a clear indication as to why. Now he will stand up and lead us to the fridge or where the family kept the water bottles.
Perceived denied requests: wanting to end an activity or get a new toy or activity	Ben is unable to request to end an activity and he typically becomes physically aggressive to do this. Ben had been trying to request items and activities and we did not recognize his requests. This resulted in Ben becoming aggressive.	"I want____" "I'm all done" "Wrong activity"	When Ben demonstrated signs of being all done we held out our hands and he would take them and together we would sign "all done". Ben would be able to select a new toy or activity whenever he wanted to.	He initially stood up often without a clear indication as to why. Now he will stand up and go to the toy/activity shelves.
Perceived denied requests: washroom	Ben is unable to request to use the washroom. Ben may be making multiple attempts to request to use the washroom that we are missing. At times, he will get up and go independently, but at other times, he may become physically aggressive.	"I need to use the washroom"	When Ben stands up, we immediately move out of his way so that he can go to the bathroom. A toileting picture is always visible and we touch the picture when he stands up and say "go bathroom".	He initially stood up often without a clear indication as to why. Now he will stand up and go to the washroom.

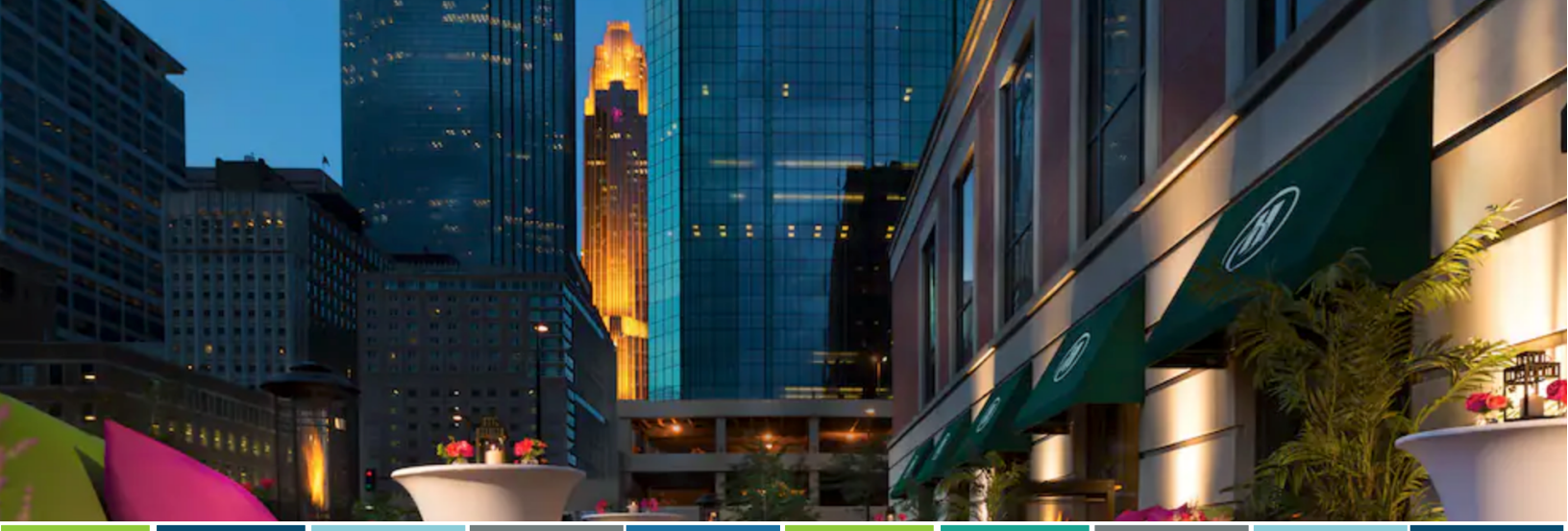
Ben almost entirely stopped engaging in aggressive behaviours at home within a few months because we now recognized the indirect factors impacting him and could meet his needs. As Ben's distress reduced at home, the school reported increased physical aggression towards staff and students, which was likely due to Ben's needs being met more quickly and consistently at home compared to at school. When Ben was aggressive at school, based on the behaviour plan, the staff put Ben into a seclusion room and if he refused to go, they called the police to assist. When parents learned about Ben's behaviour plan they arranged a meeting between the home and school teams. The school completed the five steps process to determine the indirect factors impacting Ben at school. The teams met to share information and discuss the strategies that were working at home. The school team implemented similar strategies which resulted in a reduction in Ben's aggression and distress at school.

Imagine how difficult it would be if the only way you could communicate was to have an emotional outburst, become physically aggressive, self-injurious, damage property, or even worse, give up trying. As a result, those around you would be confused, concerned, and sometimes upset by your "behaviour."

BACK TO CONTENTS

They would often misinterpret what you were trying to say. They might respond by giving you something you did not want or need, redirect you, ignore you, or punish you because of your communicative form. People with complex communication needs can often find themselves in these situations. One adult AAC user reported feeling helpless and hopeless in school and being punished regularly because their signs of distress were misunderstood. They wondered how different their time in school, and even their childhood, would have been if their teachers had this information. Every person deserves to be understood, and it can be devastating when we get it wrong. This five-step process can help us figure out the impact indirect factors have on an individual and the meaning behind their distress. Then can we support the person with getting their needs and wants to be met. ■

BACK TO CONTENTS



Assistive Technology in Special Education, Rehabilitation and Everyday Living

40th ANNUAL CONFERENCE

Closing The Gap

OCTOBER 19-21, 2022

Preconference Workshops
Monday and Tuesday,
October 17 - October 18, 2022
MINNEAPOLIS, MINNESOTA

SAVE THE DATE Plan To Attend!

Hilton Minneapolis Hotel

Reservations can be made by contacting the hotel directly, or booking online using the links provided below. Refer to the "Closing The Gap Conference" when making reservation to receive conference room discounts when and where applicable.

Accessibility – Each hotel offers a limited number of handicapped accessible rooms. If you require an accessible room, state your needs when making your reservation and reserve early to better insure a room that will best accommodate your needs. Learn more.

Hilton Minneaplis Hotel
1001 S Marquette Ave S.
Mineapolis, MN 55403

PLAN NOW TO JOIN US IN 2022!

Join us for the 40th Annual Closing The Gap Conference and return home with knowledge and tools to implement all that is gained!
Through shared best practices and research, networking, training, hands-on opportunities and an expansive exhibit hall, conference participants will find information, strategies and products that prove beneficial and, oftentimes, unsurpassed for use in their work and in their lives.

WHO SHOULD ATTEND?

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

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

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

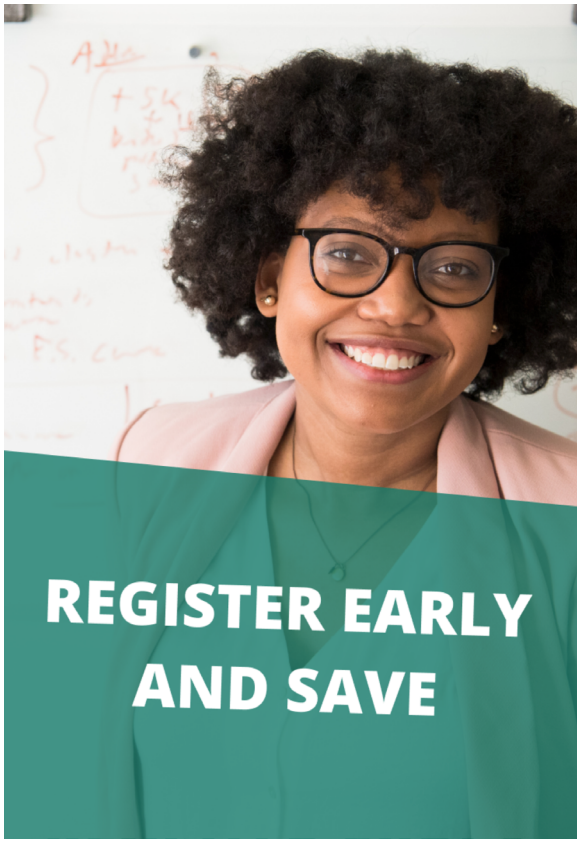
Topics will cover a broad spectrum of technology as it is being applied to all disabilities and age groups in education, rehabilitation, vocation, and independent living.

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

WE'RE EXCITED TO RETURN IN-PERSON FOR CLOSING THE GAP '22

Come, network and learn!

Meet with your friends and colleagues from around the world and discover rich resources and tools through our educational sessions, state-of-the-art exhibits and more!



Apply American Rescue Plan (ARP) to Closing The Gap Registration

- If you're from a school district, federal ARP funding may be used for professional development that supports students' learning. Learn more

Discounted Presenter Rate

- Presenters will qualify for a discounted registration rate

Members Qualify for Exclusive Discounted Conference Registration Rate

- **Membership has it benefits**. In addition to year-round professional development resources, Closing The Gap Solutions members are also offered the BEST conference registration rate!

Administrators Participate Free

- When any school district or hospital staff member registers for the 3-day conference, one administrator from that organization can attend the conference for FREE! (Application Required)

Conference Scholarship

- A limited number of scholarships will be available for person with disabilities or parents, guardians of children with disabilities. Scholarships are awarded on a first come, first served basis and are awarded, one-time only per-person. (Application Required)

FREE Exhibit Hall Pass

Visit the exhibits to discover rich AT resources and tools manufactured by today's leading AT companies.

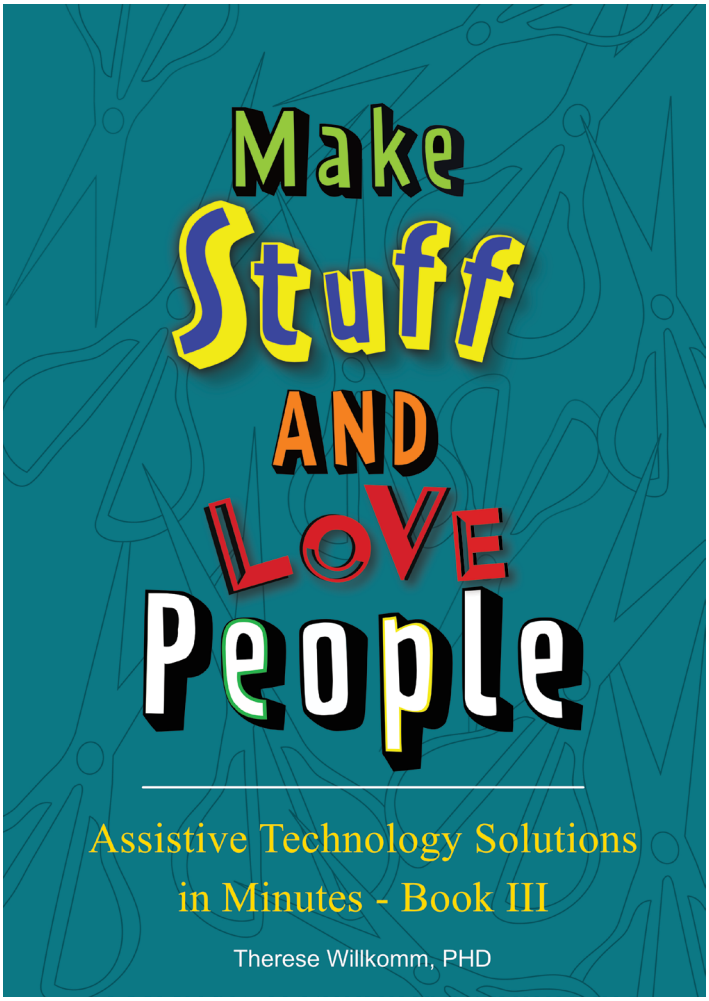
- Pass good Tuesday, October 18 through Friday, October 21. (Registration Required)

Group Discounts Available – Send Your Team & Save!

- Pre conference workshops sold separately.

Registration detail, including, group, student and parent discounts... CLICK HERE!!

Make Stuff and Love People Making AT in Minutes



The "assistive technology makers movement" has a long history. Prior to 1988, the word "Assistive" did not appear in the English dictionary. This technology was often referred to as adaptive equipment or rehabilitation engineering. The leaders in the AT makers field were often rehabilitation engineers and occupational therapists. In 1988, The Technology Related Assistance Act was passed and the word "assistive" technology with its formal definition was created. As the field of assistive technology began to grow, more and more items became commercially available and no longer needed to be created, they could be purchased in catalogs. There was no longer a need to make homemade switches or battery interrupters. In fact it often costs less to purchase them than to make them. If something did need to be fabricated, rehab engineers, OT, and others would make the needs customized devices. In the mid-1980s, mobile rehab engineering units were being developed to travel in rural areas to fabricate needed devices for individuals with disabilities. These units were often very expensive to maintain. Additionally, there may have only been one mobile unit available in the state that could provide these services.

Over the years, the number of individuals with disabilities continues to rise. According to the recent US Census report, it is estimated that at least 20% of the United States population has one or more physical, sensory, or cognitive limitations that could benefit from assistive technology solutions. Unfortunately, the funding available to meet these assistive technology needs continues to be a challenge. Furthermore, the number of professional engineers available to provide these services and funding to pay for these services has decreased. The ma-

DR. THERESE WILLKOMM, PhD, is the Director of New Hampshire's State Assistive Technology Program with the Institute on Disability at the University of New Hampshire (UNH) and also a clinical associate professor emeritus in the Department of Occupational Therapy. She has developed, coordinated and taught the assistive technology courses for the Graduate Certificate Program in Assistive Technology for 23 years. She is also known nationally and internationally for her innovative strategies for creating solutions in minutes and has designed and fabricated over two thousand different solutions for individuals with disabilities. She has presented her work in 42 states, ten foreign countries and three U.S. Territories and has authored over 22 publication including her recent book Assistive Technology Solutions in Minutes Book 3: - "Make Stuff and Love People".

BACK TO CONTENTS

jority of assistive technology needs in homes, workplaces, and schools are not considered medically necessary and therefore are not paid for by health insurance or third party payers. As a result, teachers, service providers, consumers, family members, and community members began making more assistive technologies using whatever materials they had available. There was also a sense of urgency and a need to quickly make or modify solutions.

Advances in material sciences have resulted in the rapid design and fabrication of assistive technology solutions. For example, new types of adhesives have reduced the need for glue, screws, or nails. Advancements in the space industry resulted in the development of quick release fasteners. New types of plastics have resulted in rapid fabrication and prototyping without the need for large fabrication equipment such as drill presses, table saws, and lathes. Advanced manufacturing in the electronics industry has also resulted in rapid device creations using Arduino and Raspberry Pi. Switch making no longer requires the use of a soldering iron. 3D printing is now easily available in nearly every community. Middle schools, high schools, community libraries, and maker spaces provide access to 3D printers and other fabrication equipment. With the advent of YouTube, millions of "how-to" maker videos are available to teach people how to make various assistive technology. We live in a fast food, fast paced society in which people want information and solutions now. Social media content, including TikTok videos, demonstrate how many assistive technology solutions can be created in a minute.

Welcome to "The New AT Makers Movement" where virtually anyone can be a "maker". Each year, formal and informal AT makers fairs and events are popping up all over the United States. There is an entire "Nation of Makers" in which the assistive technology makers are a subset. At least ten different assistive technology maker organizations and resources currently exist on the web.

THE CONSUMER-DRIVEN AT MAKERS MOVEMENT AND MANAGING THE CHALLENGES

New innovative assistive technology fabrication projects emphasize consumer choice and control in building and deploying assistive technology (AT) devices that will save time and money in accessing needed devices. These projects utilize a consumer-driven/response driven model in which the consumer decides what devices they need or would like to make instead of devices being made, or just given to the individual. When consumers are involved in choosing, creating, building, and modifying the needed devices, there is a greater chance the devices will be used. AT maker workshops provide great opportunities to learn about new materials and techniques for making AT devices. People are often inspired and empowered by what they learn at these workshops and the skills they have developed for making AT devices.

The goal of a consumer choice, controlled demand model for building and deploying "just-in-time" needed AT devices has many challenges. Time, money, space, tools, materials, transportation, skills, people, and failure rate are just a few of the many challenges associated with making assistive technology. And with each challenge, new innovative solutions have been developed to address these challenges.

Time: Individuals require immediate solutions and there is no time to waste. Time to explore potential ideas; time to obtain needed tools and materials; time that the maker space is available; travel time to and from the maker space; to load and unload materials from the car; time to make the devices and further revisions and improvements; problem-solving and prototyping time; volunteer and service provider time; procuring materials; travel to pick up or order materials, and waiting for them to come in; time in preparation and clean up; 3D printing time. Time saving fabrication tips along with multi-use reusable materials continue to reduce the time challenges.

Money: Cost of materials, who pays, and who can afford it. Insurance doesn't pay for AT making. Locating funding and resources for makers to find free or low-cost supplies; purchasing or securing small amounts of materials; making mistakes or starting over and needing more materials. Social media is rapidly providing opportunities to share resources or source materials for free or low cost.

Access to maker spaces, tools, materials, and know-how: Maker spaces may not be open when you need them to be open; there may be a member's fee; it may not be accessible; needed tools and materials may not be available; quality and willingness of available help; access to transportation to and from the maker spaces. These challenges have resulted in pop up maker spaces at home, in schools, and at work. The crates on wheels that fit in the car allows for portable making in almost any environment. Also the sharing of tools and materials among makers who love to make stuff becomes a natural.

Maker failures and making changes: Making assistive technology has a very high failure rate. Some believe that 90% of the solutions that are made for the first time, fail or need further revisions to "get it right". Therefore, embrasing the "….ABLE Principles" promote the creating devices that are adjust**able**, adapt**able**, reposition**able**, port**abl**e, collaps**ible**, expand**able**, and more. New multi-use adjustable materials can be used to achieve these ABLE principles.

Safety and Liability: Potential for injuries while making AT or someone being injured from the device that was made; taking informed risks and minimizing those; professional liability insurance considerations can deter people from making AT. However makers can still be a conduit of information to share ideas and resources to those who do want to take the appropriate risks and make devices.

2020 AND THE IMPACT OF THE PANDEMIC ON THE AT MAKERS MOVEMENT

According to Jose Gomez-Marquez, co-director of the MIT Little Devices Lab, COVID-19 has made us become better problem solvers. For example, early on in the pandemic, there was a shortage of personal protective equipment (PPE) that resulted in thousands of individuals becoming makers in their homes, making masks, face shields, and gowns. There was an incredible sense of urgency, people's lives depended on this. Many major manufacturers stated they were going to manufacture PPE, ventilators, etc., and they knew it would take weeks before the final product can go out the door. People with 3D printers made face shields in one hour, while others found that using a transparency film and double-faced loop, a face shield can be made in one minute using one-tenth of the materials. We are getting faster, better, and more resourceful in solving challenges immediately - not next month, not tomorrow, not this afternoon but "right now". We have changed from "I can', to "I can do it"; to "I just did it, and here is how". YouTube has been the greatest resource for conveying this how-to information.

In many ways, the COVID-19 pandemic has encouraged a paradigm shift to think differently about creating and deploying assistive technology solutions in the most consumer responsive and time-efficient manner. New developments in virtual visits, materials, tools, and fabrication methods have enabled the rapid creation and deployment of assistive technology devices to individuals at an affordable cost. Individuals with disabilities, their family members, caregivers, and service providers can be trained to successfully build various devices using AT device maker kits and remote training via Zoom or other similar technologies, such as FaceTime, Microsoft Teams, etc., that save time and money. While thousands of AT devices, intended to enhance communication and full participation, can be made for $5 or less, local stores often do not sell small quantities of materials, and the instructions to create AT devices are not readily available. In addition, it is not unusual for people to spend hours traveling to multiple locations and spend up to $100 to build something that could be made in 5 minutes for only $5 worth of materials using this new paradigm shift. In addition, individuals with disabilities, teachers, caregivers, and service providers often lack the financial resources and time necessary to travel to businesses and gather the materials necessary to build most assistive technology devices. COVID-19 and extensive stay-at-home orders prevented local travel and physical access to most businesses. Furthermore, assistive technology purchased or created for any individual often requires further adaptations or customization.

HOME – THE NEW MAKER'S SPACE

For over ten years, the makers' movement has grown, with maker spaces springing up in communities around the country. The challenges with community maker spaces are that many have not been sustainable due to the limited days and hours of operation. They frequently require a membership fee and prior training on the use of the available equipment. Maker spaces are typically located in donated locations that may not be accessible to people with disabilities. Loading a car with the materials to take to a maker space, traveling to the space, unloading the materials, making the devices, traveling home, and unloading finished devices can be challenging. Not only is this process time-consuming and expensive but is often impossible for persons with disabilities who experience transportation challenges. Due to challenges associated with the availability of locations to fabricate needed devices, maybe the greatest maker space is at home. Many of the best devices used today were made in people's homes. Bill Gates and Steve Jobs are just two of the historically known makers who began making computers in their garages. People with disabilities, their families, and service providers can also be powerful makers at home by empowering them with immediate access to tools, materials, thousands of how-to videos, and one-on-one virtual consultations or training. Thousands of AT devices and solutions can be made at a dining room table, kitchen counter, in a garage, or in a barn using basic hand tools and everyday materials. Drill presses, table saws, and 3D printers are often not required due to new multi-use materials, tools that don't require electricity, as well as reusable and repurposed materials.

As mentioned earlier, research shows that when someone with a disability is involved in the creation of their own solution, it results in a greater likelihood that the person will use the solution, rather than devices that are just given to the person by healthcare or service providing agency. Every person is different, and we cannot provide "one size fits all" solutions. Having consumer-driven, consumer choice, and demand/response-driven models will enable individuals to fabricate, modify, and customize solutions to their own specifications.

Several different delivery models provide customized medicine and customized personalized nutrition using innovative and demand-driven systems. The home delivery of pre-packed pills or making meals from kits, addressed challenges associated with time, travel, how-to instructions, etc. These proven approaches can also be applied to the assistive technology makers movement. Identify a potential solution that a user or provider would like to make an order an appropriate AT makers' kit for that solution. Kits should provide the tools and materials that embrace the ABLE principles along with a QR code linking to a YouTube video that shows how to make the desired solution. This approach would save time and money in not having to procure small amounts of tools and materials to make AT solutions and having access to instructional videos or real-time makers via Zoom, Teams, or FaceTime. Hosting AT maker theme days both virtually and in person is another opportunity. These days include: MakeAT™ in a Minute Mondays; Tech Tuesdays; What and Where to Find It Wednesdays; Thirsty Thursday - Make and Sip;

BACK TO CONTENTS

Making AT Fast and Fabulous on Fridays; and AT Materials Swap Saturdays. These innovative approaches can address many of the challenges associated with making assistive technology devices.

Now more than ever, a consumer choice and response-driven model for fabrication is needed to save time and money and achieve desired outcomes for the person with a disability to be able to perform an essential task at home, in the community, workplace, or school environment.

Examples of Devices That Can Be Made in Minutes:

- Hands-free eating and drinking solutions
- Book holders, page-turners, page lifters, tactile overlays for books
- Scanning and reading solutions for books
- Tablet holders and cellphone holders
- Writing and typing aids, solutions for holding, grasping, and carrying objects
- Tactile marking solutions for QR codes
- Devices to assist with life skills
- Jigs and fixtures in the workplace for manufacturing and assembly
- Hands-free magnification solutions
- Communication devices
- Mobility aid modifications, solutions for walkers, canes, crutches, or wheelchairs
- Hands-free mounting and holding solutions for cell phones, tablets, and computers
- Mounting solutions for holding devices in cars, in beds, at tables, in a recliner, or on the floor
- Body mounting solutions for memory aids, communication devices, cell phones, tablets, notebooks, etc.
- Solutions to accommodate for vision and/or hearing loss
- Back savers, one-handed or stabilizing solutions
- Transfer devices and solutions to reduce slips and falls
- Solutions for getting up, into, and out of a seated or horizontal position
- Organizational devices and tools for self-regulation
- Momentary switch kits for battery-operated devices

Suggested Tools and Materials for Rapid Making AT:

- PVC pipes and fittings: three-quarter wide PVC and half-inch wide CPVC; T joints; elbows; winged elbows; end caps and two-way adjustable elbows; handheld ratcheting PVC cutter
- Loc-Line® tubing: three-quarter inch diameter segments plus couplings; elbows; fixed mounts, and handheld pliers
- Coroplast: 4 mil and 10 mil thick sheets, Coroclaw ® cutters, Klever Kutter ®; scissors; utility knife; large T square; and large two-feet wide wooden paper cutter.
- Adhesives: Cattounge ® tape; Loc-Lift Rug Gripper tape; 3M Dual Lock; 3M VHB tape; Remo 1 and Remo 2; UGlu™; double-sided permanent foam mounting tape; non-slip rubber tape
- Velcro® Brand Products: two-inch wide OneWrap™; self-adhesive Hook 88; Loop 1000; Veltex ®

BACK TO CONTENTS

- Other: Gripper Loop ™; transparency film; binder clips; bar clamps and paper clips
- Instamorph® – black or white;
- Corner guard for walls: various widths 5/8", ¾" 1-1/8"
- Heavy-duty needle nose pliers

SUSTAINABILITY OF THE AT MAKERS MOVEMENT

Making devices for each person requires truly understanding the needs and goals of the person, the context, and their environments. Therefore, customization and fabrication need to take place in the person's home, in a school, or at the workplace. Furthermore, achieving local capacity building is important by encouraging skill development and confidence at the local level. With confidence and ongoing skill acquisition, individuals will be more likely to fabricate additional devices using these easily available new low-cost tools and materials. Building local capacity in assistive technology fabrication leads to the development of a sustainable AT makers program. And finally embracing the "…ABLE Principles" in device creation will enable ongoing interactions and improvements in development of appropriate solutions that can save both time and money. ■

BACK TO CONTENTS

RECENTLY ADDED WEBINARS

Questions to Ask Your OT to Optimize AAC Device Use in the Classroom and School Environments

By Froma Jacobson

LMany students (described in the categories of low and high incidence) who use AAC products could be communicating more effectively across environments if attention were paid 'to the little things'. Typically the OT or PT on the trans-disciplinary team that assesses a student to determine candidacy for an AAC device is looking at access/selection mode but this is only part of the role of the occupational therapy in the assessment/follow along process!

VERIFIABLY the lens of the OT exceeds motor access. This webinar will focus on AAC through the OT lens looking at the various perceptual, motor, environmental adjustments that could be made to the student – device connection that could potentially enhance communication and engagement in the educational setting. Participants will co-author 'the list' classroom teachers can present to the occupational therapy team member to enhance student success in the classroom, bus, lunchroom and playground!

This session is intended for school personnel who interact with students using AAC devices and strategies throughout the school day, from bus pick up to drop off!!

Accessing American Rescue Plan (ARP) Funds for AT Devices, Services, and Training

By Dave Edyburn

COVID-19 has clearly impacted how schools operate. However, few assistive technology leaders or families are aware that the federal government has made special funding allocations to address the special needs of students with disabilities as we try to move beyond the pandemic.

Join us to learn how to advocate for using special federal COVID-19 relief funding to address unmet assistive technology needs. Among the things you will learn in this session:

- Purpose of the ARP funding
- How to locate information on your state's allocation under ARP's Elementary and Secondary Education School Relief Fund (ESSER) and the plan proposed/approved by the U.S. Department of Education
- Discover how to locate information about your Local Education Agency (LEAs) "safe return to in-person instruction and continuity of services" plan submitted to your state
- Explore allowable expenditures
- Create an action plan on how AT devices, services, and training might be addressed to support students with disabilities during learning recovery..

LOG IN TODAY!

Do you need to document your learning? Members simply view an archived webinar and, upon completion, can request CEUs and/or certificate a of contact hours. *It is really just that simple.*

www.closingthegap.com/webinars/archived-webinars/

The Rise of Adaptive Gaming

"My gaming career was non-existent growing up. I remember I'd just sit there passively watching my friends and siblings play video games. I would always be there cheering them on from the sidelines. I would imagine what it would be like to play myself, to run around freely in a video game exploring an entirely new universe and interacting with other players online or take on the role of one of my favorite superheroes and have special powers! I knew there was no way I'd ever be able to play using the standard controls or on a mouse and keyboard, so these remained part of my imagination. However, I knew I was a gamer at heart, and it saddened me that I wasn't able to participate."

- Bradley

I'll never forget the day all of this changed. Brad and I were on lunch break at the college he attended, when all of a sudden he got overwhelmed with joy and excitement. I went to go see what all the hype was about and we both found ourselves staring at the adaptive product that would change Brad's life by allowing him to finally play modern day video games!

On September 4th, 2018 Microsoft launched the Xbox Adaptive Controller, an adaptive controller that allows people with physical disabilities, like Brad, to finally be able to join in on the gaming action! The Xbox Adaptive Controller retails for roughly $100.

XBOX ADAPTIVE CONTROLLER

Xbox Adaptive Controller

The controller itself has two large programmable buttons and 19 ports that can be connected to a range of accessories and adaptive switches to make Xbox and PC gaming far more accessible. They made it possible for people with physical disabilities to use their existing adaptive switches and joysticks with the controller. This is really helpful because you don't need to purchase new switches or joysticks if yours are compatible.

BRADLEY HEAVEN AND DANIEL O'CONNOR Bradley was born with nonverbal spastic quadriplegic cerebral palsy, but he never lets it hold him back from living life to the fullest. What started out as a job for Daniel at the age of 19, working as Brad's full time aide while he attended high school, has turned into a journey neither of them would have ever expected. Over the years they've built a very unique and everlasting friendship. A decade later, they're still attached at the hips! They're now using their unique journey and experiences with adaptive products and assistive technologies to help others with disabilities through their non-profit, All Access Life.

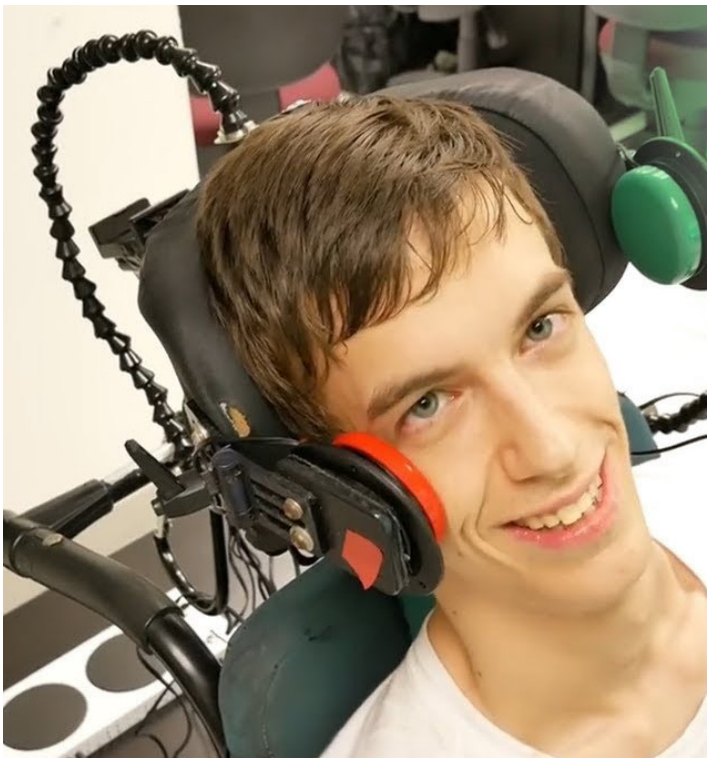
BACK TO CONTENTS

When the controller first arrived we didn't waste any time to test it out. The first game we tried was a fighting style game. Brad used 4 head switches (programmed to move his character) and two elbow switches (programmed to punch and kick). When the match began Brad's character charged towards me hailing a vicious combination of punches and kicks. We were both laughing hysterically! This is a moment we'll never forget. On that day we realized the impact this controller was going to have on the lives of people with disabilities. We decided to make a video review and post it on our YouTube channel. Our review went viral and currently has over 1.3 million views!

Link to our YouTube Video: https://www.youtube.com/watch?v=MHOYQQTvQu4

YouTube video: Xbox Adaptive Controller Review

After a lot of testing, Brad realized his favorite gaming setup is using two head switches. This is because he has the most control over his head movements. You might be wondering how on earth Brad is able to play mainstream video games using only two switches?! Brad and I play together as one controller thanks to the **Xbox co-pilot accessibility feature**. This feature allows two controllers to act as one. I control 17 out of the 19 buttons and Brad controls the other two. Together we play as a team. I always make the 2 buttons control the most crucial buttons in a game. For example, in a soccer game, Brad's two head switches will be pass and shoot! In a driving game, they will turn the car left and right. The possibilities are endless! The co-pilot feature allows for any game to be playable as long as the user of the Xbox Adaptive Controller can use a single switch. Some of Brad's current favorite video games are Divekick, Banjo and Kazooie, Halo Infinite and Fifa! We also love experimenting with different gaming setups. Depending on what style of game we're playing, Brad may use multiple adaptive switches or even adaptive joysticks. He loves playing fighting style games while controlling his character autonomously. Brad and I play against each other and he goes all out!!



Roughly one year after the Xbox Adaptive Controller hit the market, Logitech created an Adaptive Gaming Kit for this controller. This kit comes with a total of twelve adaptive switches for roughly 100$. There are four different types of switches (3x small buttons, 3x large button, 2x variable triggers, 4x light touch button) included in the kit so you can really customize your gaming setup! We were so happy to see that other companies wanted to create products to support and amplify the Xbox Adaptive Controller.

BACK TO CONTENTS

LOGITECH ADAPTIVE GAMING KIT

Once we got our hands on this kit our gaming setups were taken to the next level! We tested out all of the switches that came with the kit and were thoroughly impressed! We tried knee switches, foot switches, finger switches and much more! Normally just one of the adaptive switches Brad used on his AAC device (jelly bean switch) had a price tag of upwards of 50$!!! Logitech came up with an affordable solution for people who would like to use more switches in their setup for a fraction of the price! They made it possible to experiment and find a gaming setup that works for the user!

Logitech Adaptive Gaming Kit

Brad also had success playing racing games using Logitech's g923 steering wheel. Due to his involuntary movements, he's unable to hold onto the steering wheel, but we found a way to secure his hand to it using Active Hands Gripping aids! He was having a difficult time staying on the course in these driving games. However, we decided to try Forza Horizon 5 on Xbox and to our surprise they had an accessibility feature that controlled the steering wheel through artificial intelligence!! The steering wheel began darting left and right automatically to keep the car on course! Brad became a professional driver with this setting activated! He was smiling ear to ear and was having an absolute blast!

Logitech Sterring Wheel: https://www.logitechg.com/en-ca/products/driving/g923-trueforce-sim-racing-wheel.html

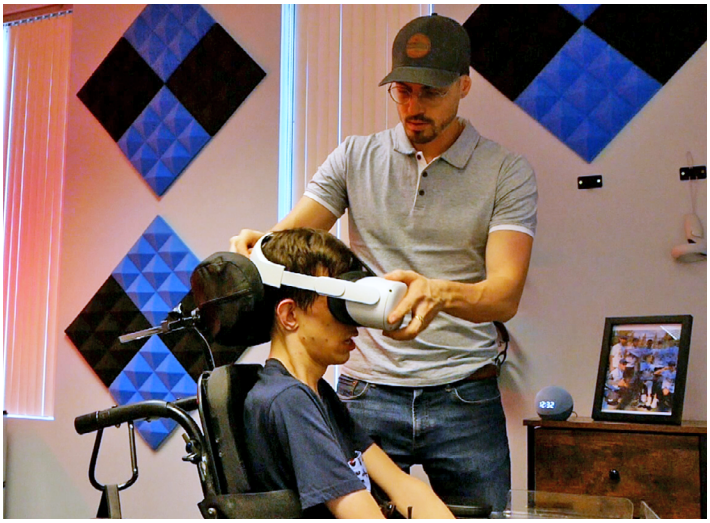
Active Hands Gripping Aids: https://www.activehands.com/product/general-purpose-gripping-aid/

Link to our YouTube Video: https://www.youtube.com/watch?v=0JTtfwQ8qnM&t=

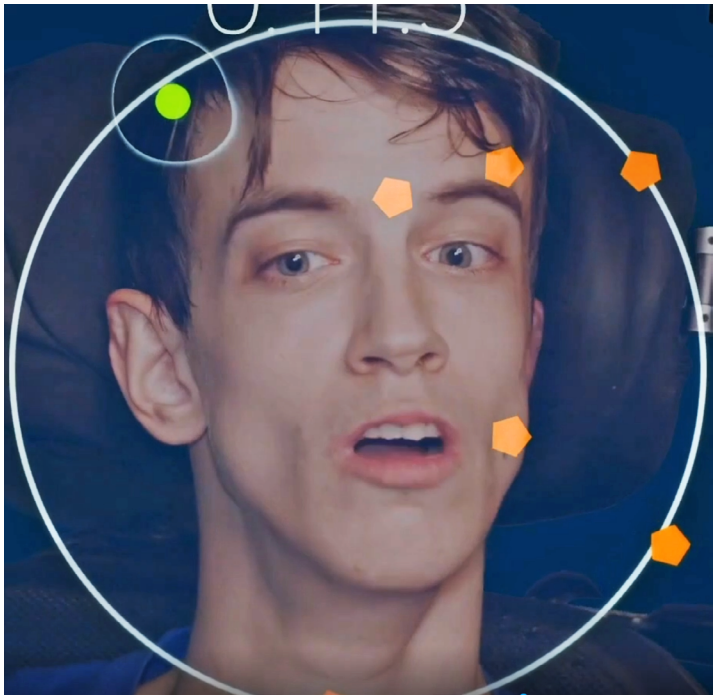
Brad's Driving Experience!

BACK TO CONTENTS

Once we got a taste of adaptive gaming we began finding ourselves interested in finding other products that would enable people with disabilities to play video games. The coolest and most exciting product we recently tested was the Oculus Quest 2 virtual reality headset. It was an amazing experience the first time Brad put on the headset. Walking with dinosaurs, swimming with sharks and riding roller coasters were just some of the many experiences he had. The possibilities of virtual reality for people with physical disabilities really excite us! This is because it opens up a whole new world of possibilities. In virtual reality you also don't need to worry about accessibility either! You can hang out with friends in a virtual environment and not have to worry about physical barriers or if the location is accessible!



Finally, the last type of adaptive gaming Brad's been enjoying is eye tracking gaming. Brad uses his Tobii Dynavox eye tracking device to play a variety of different video games using nothing but his eyes!! We feel this type of gaming can have a huge impact on the lives of people with disabilities since it offers autonomous play. With all the other gaming setups, the user has to rely on someone to set them up to be able to play games. However, if the user has an eye tracking device, they don't have to rely on anyone!



In this picture Brad is playing a game called HyperDot. He is using his eyes to navigate the green circle. He must avoid the orange pentagons that are coming at him!

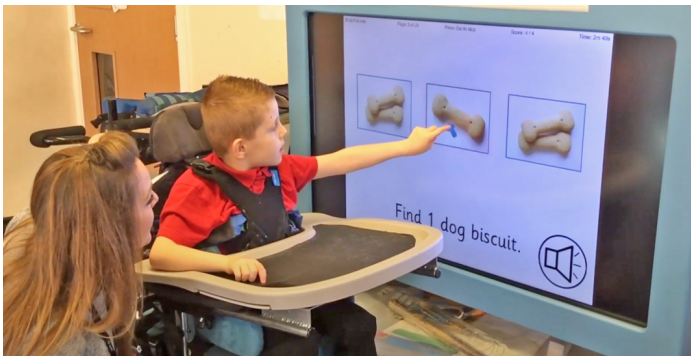
Currently, eye tracking gaming is the type of gaming that Brad plays the most. He enjoys playing games this way because he's able to be fully independent. He also feels he has access to a wider range of games and apps on his eye tracking device.

To conclude, we are so excited for the future of adaptive gaming! Over the past few years we've seen more and video games come out with accessibility options making it easier for people with physical disabilities to play. Adaptive gaming is on the rise and we're so excited that people with physical disabilities can finally join in on the gaming action because…GAMING IS FOR EVERYONE!!! ■

BACK TO CONTENTS

product spotlight

HelpKidzLearn – Online Learning for Special Education



What is HelpKidzLearn?
HelpKidzLearn has been created by Inclusive Technology. It is a collection of software subscription services for young children and those with learning difficulties to play online. The software is split into four different subscriptions: HKL-Games & Activities, ChooseIt Maker 3, ChooseIt Readymades and Insight.

Online learning for Special Education
HelpKidzLearn – the home of accessible software, enabling children of all abilities to play, develop and achieve.

LEARN MORE

CHEELCARE – INTRODUCING COMPANION Q

Power Assist System for Adult and Pediatric Users
Compatible with Folding and Rigid Manual Wheelchairs
Quad Controls

- 250W Motor
- Handlebar Controls
- 5-Speed Control
- Reverse
- Non-Marking Tire
- Soft-Grip Handles
- Adaptor Pull-Strap
- 30km / 18.6mi (Range on a full 3-hour charge)

LEARN MORE

BACK TO CONTENTS

Flexible Mounts Created by Modular Hose for Assistive Technology

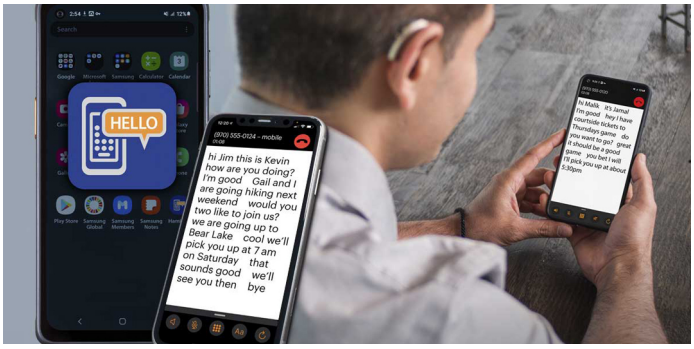
Tablet and Phone Holders

The ModularHose Tablet Holder is an adjustable holder that works great with tablets from Apple, Microsoft, Samsung, Amazon, and more. Designed for tablets measuring diagonally up to 15" (381mm). Use the optional Deep V-Tabs for tablets with skins/cases up to .75" deep. This is a great solution for holding your tablet on a desk, table, tray, wheelchair, counter, bed, and more. Single-arm designs are popular because of the minimal space it takes up, but keep the arm short and vertical so that it can safely hold your device. Depending on your application, consider a two-arm configuration to hold up a device that weighs between 1-2 lbs.

The ModularHose Phone Holder is a quick and simply solution to hold up phones, music device, and more that are 2.25 to 4 inches wide.

LEARN MORE

Announcing Hamilton Mobile CapTel for iOS and Android



The Hamilton® Mobile CapTel® App Goes Wherever You Go

The Hamilton Mobile CapTel app delivers the same reliable captioning experience their customers have enjoyed at home and in the office for years – now at your fingertips wherever you go. It syncs with all your mobile device contacts, provides captions on incoming and outgoing calls, enables you to access your call log and review captions later, and is fast and accurate

Hamilton Mobile CapTel AppApp for Apple devices

Hamilton Mobile CapTel delivers the reliability and confidence our customers have come to love about Hamilton® CapTel® solutions – and now you can take it with you wherever you go. With their new app, you'll get:

- Captions on both incoming and outgoing calls
- Built-in Voicemail with captions
- Call Forwarding and Custom Caller ID
- Customizable captions for easy reading – choose your font style, color and size
- Syncs seamlessly with contacts on your device
- Direct access to customer care, 24/7/365
- Ability to access your call log and review captions
- Simultaneous viewing of captions on a larger screen
- And more!

LEARN MORE

BACK TO CONTENTS

Orbit Research – Announcing the Orbit Speak, The Modern Notetaker Redefining Convenience

The Orbit Speak is equipped with features of a modern braille notetaker with a braille keyboard and synthesized speech output in a compact, pocket-sized device.
It offers built-in note-taking and productivity applications including a book reader, file editor, calendar, address-book, calculator, clock and alarms. It can also connect to smartphones and computers and provides a convenient way to enter text in braille and control the device without having to use touch gestures.

Weighing less than eight ounces, the Orbit Speak is similar in size to modern smartphones, allowing it to fit comfortably in a pocket or purse. Despite its compact size, it provides an ergonomic Perkins-style braille keyboard, with high-quality scissors keys and includes a cursor keypad for navigation.

The Orbit Speak is a perfect complement to the Orbit Reader family of braille displays and the Orbit Writer. It combines the compact form-factor of the Orbit Writer with the note-taker features of the Orbit Reader while adding high-quality speech output to offer the essential functions users expect from note-takers. The onboard Wi-Fi is a game-changer, enabling instant access to the vast variety of online services and information available on the internet.

For students, it is a convenient note-taker in the classroom and for reading. The onboard braille translator enables them to do classwork and homework assignments and easily share them with teachers. For adults, it provides rapid access to professional and leisure reading, the ability to take notes in meetings or at home and a powerful set of productivity tools.s.

LEARN MORE

Say Hello to Cognixion ONE – The World's First Brain Computer Interface with Augmented Reality Wearable Speech™ Generating Device

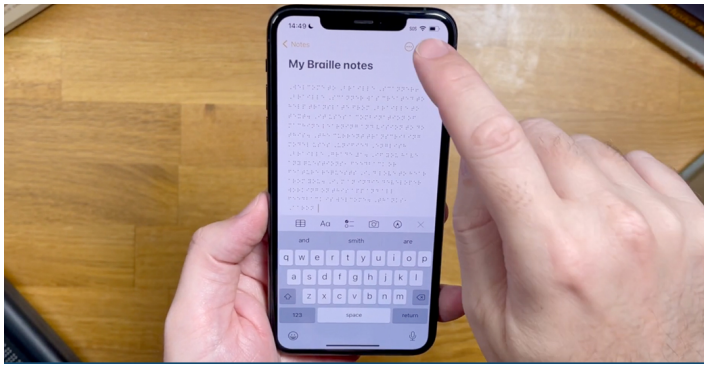
For too long, the assistive technology industry has relied on repurposed consumer electronics, often years behind the cutting edge of what is possible.
At Cognixion, they believe that every individual deserves a solution as unique as they are – and that it's possible to build one tool for communication, access, and everything else life brings their way.
Enter Cognixion ONE. No more dangling wires. No more PC monitor blocking your view of the person you're speaking with. No more leaving your voice and your control at home, or in the classroom; Cognixion ONE is a wearable window to the world, offering both speech and an integrated AI assistant for home automation control and other enrichment.e independence.

- Gain and improve decoding and reading comprehension skills together with fluency in more than 70 languages.

LEARN MORE

BACK TO CONTENTS

Braille Scanner – Translate Braille Documents



Braille scanner is a free app that allows you to take a photo of a piece of paper with Braille on it, and the braille is converted to text within seconds.

Braille Scanner was created to help convert from Braille to text. It uses a combination of machine learning and vision to do this. The current machine learning model uses united english braille, grade 1 and he's planning on adding more in the coming app updates.

Features:

- Auto document scan
- Braille conversion using Unified English Braille (UEB), grade 1
- Braille/text to speech
- Export converted Braille as text
- Export Braille characters
- 17 different app icons

LEARN MORE

OrCam MyEye – For People Who Are Blind or Visually Impaired

OrCam MyEye is a revolutionary voice activated device that attaches to virtually any glasses. It can instantly read to you text from a book, smartphone screen or any other surface, recognize faces, help you shop on your own, work more efficiently, and live a more independent life! OrCam MyEye conveys visual information audibly, in real-time and offline.

Now OrCam MyEye's features – text reading, facial recognition, product identification, and more – can be activated with voice commands! Simply speak "Hey OrCam," followed by the voice command for complete hands-free usage of the device.

LEARN MORE