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Anne Carlsen Center's Sady Paulson Featured in new Apple Technologies Promotion

Streaming to an excited group of developers, tech bloggers and Apple enthusiasts, Paulson's video, showcasing the latest accessibility features built into the next generation of Apple products, was used to preview Apple CEO Tim Cook's keynote presentation.

The video begins with Paulson behind her computer. Born with cerebral palsy, she utilizes adaptive switches mounted to her wheelchair to type on the screen, "People think having disabilities is a barrier…that's not how I see it." Multiple scenes proceed, showing people with physical, hearing, and visual impairments working seamlessly with their Apple devices to communicate, take pictures, and interact with their environments. As the video concludes, it's revealed that this footage is part of a video project Paulson is editing.

Paulson's video poignantly emphasized a key theme of Cook's presentation: to make Apple products easier for people with any type of disability to use and enjoy. As a longtime Apple user, Paulson has relied on these ongoing efforts since she first discovered her passion for film editing in 2005.

Originally from Holiday, North Dakota, Paulson moved to Bismarck in July of 2000. After graduation, she arrived at the Anne Carlsen Center for occupational and therapy services, where she met with Assistive Technology Director and Apple Distinguished Educator Mark Coppin.

Coppin immediately recognized Paulson's creativity and love of learning, and suggested she attend one of the Anne Carlsen Center's internationally-recognized TechnoCamps. Hosted at Elks Camp Grassick each summer, the weeklong retreat offers teens with disabilities an opportunity to explore assistive technologies while enjoying a traditional camp experience.

Working side-by-side with Coppin, Paulson quickly began to hone her skills in video editing and cinematography, creating an impressive portfolio that would earn her a full scholarship at the prestigious Full Sail University in Florida. She graduated with honors and the admiration of her peers and educators last February, and these relationships – coupled with her impressive achievements – have made Paulson an important advocate for Apple and their new line of accessible technologies.

Seeing his former student in the spotlight is exhilarating, but not surprising for Coppin. "It is absolutely amazing. I always knew she had this drive and determination…all we needed to do is to find the right tools to do these things she wanted to do" Coppin said. To learn more visit www.apple.com/accessibility/ ■

Tim Cook said that he could not be prouder to share the video as Apple's teams work so hard to make products accessible to everyone, and the company was highlighting those in a new accessibility website.

Photo credit: *Image via the Verge*

An Authentic Voice Through AAC for Students with Severe and Multiple Disabilities

> " "I understand why kids [with impaired speech] scream. It's frustrating not being able to speak and feeling as a mostly invisible being. Do you know the vintage movie, The Invisible Man?
>
> That's how I felt. My clothes were there, but the body and the soul felt like nothing.
>
> How can you live a life getting treated like that?"
>
> --Jamie Burke »

There are few things in this world more frustrating than the feeling that your voice has been silenced. Whether you are struggling to articulate your thoughts or simply being ignored, the sense that your ideas are trapped in your mind is maddening. Marginalized groups have always grappled with this issue. Individuals seen as "less-than" by society have to shout to secure recogni-

tion and work harder to gain the same foothold in a conversation that others are afforded through no special effort of their own. Imagine how difficult it must be to believe that your contributions have value when you are continually dismissed. A very courageous few endure until someone finally listens, while a much larger number resign themselves to the silence.

The tragedy is that the world loses out on the potential contributions of entire groups of people. This is especially true for students with severe and multiple disabilities who don't have the luxury of communicating in a traditional way. Because they cannot express themselves conventionally, many make the mistake of believing it's because they are incapable of complex thought. It is crucial

PATI KING DEBAUN, M.S. CCC, SLP is a speech language pathologist who has specialized in communication for individuals with severe disabilities. Pati speaks and consults in a variety of classrooms internationally on the topics of interactive communication, augmentative communication, and early literacy for children with disabilities. Pati is known for her hands-on and practical work with children and the use of case studies and video samples in her instruction. She has written numerous articles and published materials on the topic of augmentative communication and early literacy skills for children with disabilities. She has worked with numerous universities world-wide, teaching courses and seminars on emergent literacy, communication development and disabilities. Pati has been instrumental in developing a wide range of innovative literacy and communication materials for children with disabilities. Pati's company, Creative Communicating, develops a variety of resources for students with disabilities.

that we remedy this and find a way to unlock that hidden potential. What if we assumed that every student was capable? What if we considered the possibility that students who had difficulty communicating could be just as brilliant or capable as the garrulous child in the next seat?

In the words of Jamie Burke, a student with disabilities, "I could see the words in my brain but then I realized that making my mouth move would get those letters to come alive, they died as soon as they were born. What made me feel angry was to know that I knew exactly what I was to say and my brain was retreating in defeat. I felt so mad as teachers spoke in their childish voices to me…" (Biklen & Burke, 2006). What a loss it would have been if this young man had never been given the tools he needed to articulate his understanding and experience.

It is time to explore a change in mindset toward students with multiple disabilities as we work toward designing a communication system that gives them the opportunity to convey more than just simple words and phrases and affords them the opportunity to connect with others in a meaningful way. Most importantly, we must begin with the idea of presumed competence.

THE FRAMEWORK OF HIGH EXPECTATIONS

It is all too common for educators to connect early expressive difficulties to a presumption of incompetence. Students are labeled incapable, not because of any proof of their academic abilities, but because of an absence of evidence concerning their academic abilities (Biklen & Burke, 2006). This attitude insists that the student must demonstrate competence in order to be granted it. But we cannot know what someone else is thinking unless they are able to communicate with us. Thus, the least dangerous assumption is one of presumed competence (Jorgensen & Lambert, 2012). When students with

significant disabilities cannot show what they know through speaking, writing or typing, the best approach is to believe that the child can be successful and work to develop supports for that student so they can demonstrate their aptitude. Until those supports are in place, the student's performance may not reflect their true ability.

With a framework of presumed competence in place, difficulties in performance are not thought to be evidence of intellectual incapacity. Rather, educators assume that students can and will demonstrate complex thought once they've had an opportunity to engage with the world (Biklen, 2000). Teachers and paraprofessionals must enter the classroom with this positive belief system in place and have high expectations for every student. It is much too dangerous to presume that a child will never learn, only to discover that success was possible had they been provided with high-quality instruction and assistive technology to support communication and literacy skills (Jorgensen, 2005).

Every student is deserving of what psychologist Carl Rogers called unconditional positive regard, a basic acceptance and support of a person regardless of what the person says or does – or in the case of children with disabilities, what the person can or cannot do. According to Rogers, students who have not been afforded unconditional positive regard come to see themselves in negative ways. When educators and peers do not believe that the child is capable, the child begins to view himself as a failure. This is the foundation of learned helplessness. Conversely, if the adults charged with the task of educating these students walk into the classroom with hope and a presumption of competence, the child will also believe in the possibilities. Remind yourself that:

• All movements, signals, cries and gestures are a form of communication

• Everyone can learn
• Each individual has something valuable to share with you
• You have something positive to share with individuals with severe and multiple disabilities
• Positive experiences lead to success

LIMITATIONS OF CURRENT AAC IMPLEMENTATION

The National Joint Committee's Communication Bill of Rights maintains that all people with a disability "have a basic right to affect, through communication, the conditions of their existence." To that end, the guidelines assert that each person has the right to receive intervention to improve communication skills, to be in environments that promote one's communication as a full partner with other people and to have access to AAC (augmentative and alternative communication) and other AT (assistive technology) services and devices at all times (National Joint Committee for the Communicative Needs of Persons with Severe Disabilities, 1992).

Unfortunately, the majority of teachers and therapists focus on the student's mastery of the AAC system, itself, when communication should be the ultimate goal. AAC use is just one of the many tools that might support a student's ability to learn language and use it to interact with others. However, many educators misguidedly put the device at the center of the curriculum. Communication is about connection; it is a social accomplishment that "grows out of repeated opportunities for people to work together" (DeThorne, Hengst, Fisher & King, 2014). When you and I interact with others, we have more than just words at our disposal. We make use of nonverbal cues, including body language, facial expression and gestures to enhance our understanding of meaning. Yet, we often oversimplify how language works for students with severe and multiple disabilities, limiting them to

just the AAC system or just one mode of communication.

Present AAC instruction often ignores the communal aspects of communication and views it as an isolated individual ability, a set of "testable skills" (DeThorne, Hengst, Fisher & King, 2014), but communication is much more nuanced. The purposes of communication include:

- Expression of wants and needs
- Exchange of information
- Social interaction

Throughout the course of a lifetime, social interaction makes up the largest portion of our exchanges (Cumley, 2001). Unfortunately, the slowness of AAC systems often interferes with successful interactions, especially in the case of a student with severe and multiple disabilities. In the words of Jamie Burke, "On my part, I must first have a way to indicate I desire to comment. Then, a facilitator must be available to promptly cue my body to get my communication device. Then I need physical support to type. All of this takes too long for typical kids. I have lost many comments that may have engaged friendships because of the complications of this way of communicating" (Biklen & Burke, 2006). So while AAC supports rudimentary speech development and enables communication of wants and needs (Snell, Chen & Hoover, 2006), there seems to be a gap when it comes to sustaining social interactions (Mellman, DeThorne, & Hengst, 2010).

Despite many years of inclusive policies in our schools, many students who rely on AAC continue to be at high risk for exclusion from social groups (Bryen, Carey & Frantz, 2003). Students are "islands in the mainstream" rather than fully participating and successful learners (Biklen, 1985). For inclusion to work, educators must ground the process in what the students without disabilities are doing. It is not enough that the students with disabilities are physically present in the room. It is not enough that they are working on a similar academic skill. They must be engaged with the rest of class (Jorgensen & Lambert, 2012). And this is not possible if we don't provide a method of communication that goes beyond word identification and simple requests. Systems that lack a balance of communication strategies and opportunities can fall short for students regarding their overall communication. Many students get stuck in the early stages of one communication process or another because they are simply introduced to one piece of the Integrated Model of Communication (Conversation, Language and Literacy).

LET'S LOOK AT TWO EXAMPLES

I met Alex while working in a school system where the mission was to work with team members on improving the communication of students who were considered struggling. Alex is fully included in 6th grade. He has developmental disabilities, some behavior issues, severe motor apraxia and is thought to be functioning in the severe range. He sits on the outskirts of the class in almost his own separate classroom as there is always staff with him. He verbalizes Hi and Bye. Below is an example of Alex's "communication system," it is a 12-location grid with a core word display on a popular iPad system.

This is a sample of the interaction during discussion about the book "Adventures of Shiloh."

During the book reading discussion, Alex selected "want." His paraprofessional went through a selection of his typical wants and needs – drink, bathroom, etc. Verbalizing to him, Alex selected with a nod, "drink." The paraprofessional responded: "No we have to wait until break." Alex persisted and selected "want" again and again. Some of the children in the room are giggling and he is starting to disrupt the class. The paraprofessional removed him from class. (This took 15 minutes.) Apparently Alex liked the story and showed interest in the story. She calmed him down and he returned to class, but the discussion had ended and they were moving on.

This was not the first disruption. In fact, the teacher has complained about the paraprofessional being too loud when she prompts and models Alex's communication. Alex's situation is not different from many students in his situation. First, staff assumed that Alex could only use a simple word board because of his physical apraxia, but disregarded his interests, his eagerness to want to talk to others and socialize, and his need and ability to participate in classroom activities and discussions. His current system was simply too limiting for him to effectively participate in an inclusive environment. The team was forward in their thinking that Alex would be fully included, however, they failed to think about how he would communicate in that situation. Alex was easily frustrated as communication was laborious. He had no way to effectively participate in the classroom. He stood out socially because he often had outbursts. When approached by classmates, he usually just repeats, "Hi." Alex needed a more balanced and robust AAC system so his communication could grow with him, not limit him.

Emma is another student with a similar problem. I met Emma while working with another student in a middle school. Emma entered the Resource Room, and her teacher proudly explained that she was using an iPad with a popular communication application to communicate. My exchange with Emma was as follows:

Emma: Hi, my name is Emma.

Pati: Hi, my name is Pati.

Emma: I have a sister named Maggie. I like Taylor Swift.

Pati: Me too.

Emma: Eat now.

When I returned to the school for a follow-up visit three months later, I ran into Emma. Our exchange went a little something like this:

Pati: Hi, Emma! How's it going?

Emma: Hi, my name is Emma.

Emma: I have a sister named Maggie.
Emma: I like Taylor Swift
Emma: Eat now.

She was faster this time, so I was unable to get a word in. Six months from the initial visit, I saw Emma again. You can guess how the conversation went. Her progress stagnated because Emma was not taught how to have a conversation, nor was she given opportunities to expand and learn more. It was clear that she had just one page on her system, a social script that did not provide her with enough communication to move beyond this simple exchange. While she was physically capable and seemed bright, Emma was viewed as cognitively impaired by most (adults and peers alike) because her system was failing her. She lacked a rich variety of phrases; she had the same sight word literacy instruction for years. There was no plan in place to help move her communication forward by incorporating the language and literacy aspects of the Integrated Model of Communication. Emma was using the application and that was "good enough."

THE MISSING PIECES

Now let's discuss both situations. Obviously, each student requires careful consideration on what system will work best for the student. The AAC system needs to be versatile enough to meet the needs of different language levels, from early to advanced, so it will allow the AAC user to be effective as his/her capacity for language expands and as the demands in his/her environment change. Taking the higher road of presuming competence for both Emma and Alex is a necessity if we expect them to move forward in communication. Communication requires multiple skills, including conversation, literacy and language, and those skills should be integrated into the learning process as early as possible. Light, et.al. discuss the concept of communication competence as different domains: Linguistic domain, Operational domain, Social domain and

Strategic domain (Light, 1989; Light & McNaughton, 2014) Erickson & King-DeBaun, (2004) King-DeBaun (2012) McNaughton, 2014)

THE INTEGRATED MODEL OF COMMUNICATION

Communication requires multiple skills, including conversation, literacy and language, and those skills should be integrated into the learning process as early as possible. Communication partners (educators, therapists, classmates, parents) have to recognize that multiple modes of communication must be recognized and valued. Beyond the AAC system, dialogue with these students can and should involve body languages, such as facial expressions, gestures and eye gazing. To be truly inclusive, teachers can utilize every pupil response strategy whenever possible. Such an approach requires all students to respond to questions simultaneously with a gesture (thumbs up or raised hand) or other nonverbal response (look at the door, close your eyes).

These modes of message transmission are just as valuable as the verbal and written components that we must also incorporate to provide the student with a comprehensive communication system. Of course, it is necessary to differentiate the system based on the individual student's skill set. Language-based components should include core words; parts of speech, such as adjectives, verbs, pronouns and basic words; or vocabulary commonly used in classrooms, as well as an alphabet display or keyboard for spelling and a set of phrases used for various everyday activities where the timing of communication is an issue. Students need conversational language that is more than fillers or scripted comments. The system can be computerized, an app on the iPad or light tech paper systems when "access" to computerized systems are being explored. Some systems already have all components

of the integrated model built into the system.

The resulting integrated model of communication goes beyond vocabulary acquisition to incorporate support for conversation and socialization. It includes:

1. Social Skills – A collection of core phrases a student can retrieve quickly to have a conversation, participate in a discussion, provide feedback, express opinions, meet personal needs and establish relationships.
2. Literacy/Language Skills – A compilation of core words selected for their strong communicative base that is modeled in appropriate situations within literacy-based activities.
3. Linguistic Skills – Using the building blocks of core words and vocabulary lists, students put together sentences to generate ideas.

For students who have multiple disabilities, the need for an integrated model of communication becomes even greater. For both Alex and Emma, neither had enough communication to support learning and participation in the classroom, as well as social engagement. Alex's core word board was limiting for him, and his facilitators currently had no plan to move his communication forward. Emma's board was very limiting, and according to her team, she was a success. They both needed a robust set of conversational language and core words and words for modeling more appropriate language/linguistic skills. Since both students had iPad's, there were plenty of opportunities in place to use one of the programs already purchased by the school. Typically, most AAC apps have core words, a keyboard and some conversational language. Adapting those systems and adding more conversational language or more core words, etc. could be a viable solution for both students. Most AAC systems need to be customized for students in order to be effective!

First, Alex needed conversational language, and Emma needed more.

All students, especially those in inclusion situations, need the opportunity to participate fully in the classroom. Alex and Emma were at critical ages; both needed a quick method to engage and participate in the conversations of the classroom. Emma needed more conversations and things to say to peers and others, but more importantly, she needed to be on a path that would move her communication forward. She was their "success story," however, the other aspects of communication, including developing her linguistic, literacy and pragmatic skills, were missing!

Both students needed a roadmap or plan in place to keeps their communication moving forward or on track. Mapping out conversations based on what is happening in the classroom, resource room, in the hallway, at lunch and in classroom discussions is essential. Finding the optimum time to model and facilitate those conversations is nonnegotiable. If there is no conversational language on the system, someone needs to add it. Conversation, however, is only one piece of the puzzle. Next, appropriate time in the schedule is necessary for mapping out core words and sentence generation as a teaching element is involved, and the generation can sometimes be slow for students who have severe and multiple disabilities. Facilitators need to be thoughtful about what activities or classes this will be appropriate in. Other considerations will include when the student uses a keyboard or alphabet flipbook for spelling, when to introduce word prediction and when they will dictate using their words. These are the types of discussions that need to happen while planning for communication. Like any student in school, communication is vital for success, but without out a plan, it is hard to be successful.

THE PLAN

Here is a simplified example of what a plan might look like.

ARRIVAL

Both Alex and Emma arrive at their school early, rather than rushing to the resource room. The team might brainstorm about communication opportunities that exist as their peers or "peer buddies," who also arrive early, have a quick hello conversation with the students. ("Peer buddies" are friendly communication partners earning high school credits, are part of a service club or are younger students who have an interest.) When modifying their systems, listen to what the current language trends are with age-appropriate peers. It is extremely important that students sound like their peers when conversing and not like a two- or three-year-old!

CLASSROOM

Given Emma and Alex are included fully with some resource work time, variations of this plan could be implemented for both students. Within classroom discussions, the pace is fast, especially as they get older. These are the questions one might ask: What are all of the other students excepted to say? Is there a classroom language that they are expected to use? For example, in Alex's class, all students used starter phrases. ("I agree with that." "I disagree with that." "I have something to add." "I have a claim.") These same phrases could open the door for Emma's participation in the classroom too. Scaffolding and modeling will be essential. For Alex, the use of a foam core board over his iPad directed his attention to only four choices at a time, instead of all 16 choices that could be used. This is important for focus and motor accuracy in situations where timing was essential. Emma had physical accuracy, so we could use her full display of 15 items.

They both also used a commercial system that included core words, appropriate for modeling language and linguistic aspects of communication. The systems also had multiple modes of communication for different situations. For instance, in class discussion, Alex

would make a complete statement, such as " I agree with that," or "I disagree with that. The teacher was informed that when Alex had something ready for speaking on his device, he would raise his hand, meaning he was ready to talk. Emma was included in more elective-based activities but used a similar protocol. She spent more time in the resource room for academics. The same protocol could be applied in that situation where she needed additional modeling and support in group activities so she could participate with her peers. This keeps both students in the loop in classroom conversations and allows them to participate and communicate with the same expected language as their peers.

Students need to be able to quickly ask for help and ask for a break, especially when they are emotionally falling apart, as in Alex's situation. All AAC students need to be able to have enough conversational and social language on their device to be able to establish friendships and relationships. (These are not just quick chats, but commenting, sharing stories and news, asking questions and joining in conversations.) Create some easy phrases with real personality options. Let the child show who they are through their communication. Sassy, demanding, humorous, naughty, etc. are all a part of who an individual is. And make sure there is easy access to those phrases all of the time.

IN INDIVIDUAL WORK TIME

For Alex, his paraprofessional could expand on his comments. For example, he might be able to build a sentence that was appropriate to his statement. Since Alex is still in the classroom, it is important to train his paraprofessional to use "device etiquette" - turning down the sound and when she speaks to him, whispering in his ear while modeling to expand using core words or core sentence starters with other words already on his device. She writes what he does in a shared notebook so the all

team members have knowledge of what Alex was communicating to demonstrate his understanding within the class. She could write a quick email or memo for the regular education teachers. She could indicate what was modeled vs. generated independently by Alex.

Emma would have a similar protocol, only hers would be within the resource room. Also, both students need a plan to develop their literacy skills and require one-to-one support time, possibly during speech and resource, for direct instruction of literacy – how to spell, read and generate sentences with select core words.

Communication partners (educators, therapists, classmates, parents) need to understand that multiple modes of communication must be recognized and valued. Beyond the AAC system, dialogue with these students can and should involve nonverbal body language, such as facial expressions, gestures and eye gazing. To be truly inclusive, teachers can utilize every pupil response strategy whenever possible. Such an approach requires all students to respond to a questions simultaneously with a gesture (thumbs up or raised hand) or other nonverbal responses (that mirrors what the students who are nonspeaking are already using as part of their natural gestures).

Communication is the process through which students learn and show others what they know (O'Connell, 2007). In any classroom or social environment where children who use AAC are in the minority, the need for an advantage is paramount. Quality educational programs expect students to take a more active role in discussions, to generate ideas and opinions and to express those ideas via both spoken and written communication. Rarely are these skills fully integrated into the teaching of AAC. The test and retest method of instruction are most common, asking students to identify words rather than generate language of their own. Prompts like "touch the _____, point to

_____, and show me _____" are illustrations of testing, not communication.

It would take a nonspeaking student with a communication system receiving 30-minute speech therapy sessions two times per week a grand total of 84 years to reach the same amount of language exposure the typically developing 18-month-old child has been exposed to over 4,380 hours of oral language at a rate of eight hours per day from birth (Korsten, 2005). We have to serve these students better and give them the opportunity to connect with peers and adults, using AAC as a means rather than an end.

If we think of communication as the integration of using multiple modes that integrate quick and automatic meaningful comments and questions and more thoughtful generative language in the mix for those learners, we can truly begin to realize their potential and their current understanding. From there, success snowballs. As students perceive themselves to be successful communicators, they are more likely to participate in more challenging tasks, including the development of literacy and language skills (King-DeBaun, 2012).

This snowball effect doesn't apply to the child alone. Beyond the invaluable boost of confidence the student receives from his/her success in generating meaningful conversation, both peers and adults view that student in a more positive light, as well. Much research has concluded that successful social interactions hinge largely upon the attitudes and perceptions communication partners hold for one another (Richter, Ball, Beukelman, Laser & Ullman, 2003). Once a student begins communicating unique ideas and thoughts, fellow students and staff are motivated to engage in continued communication with the student. Suddenly, the student has a voice.

When we work from a place of presumed competence, we assume relevant meaning from a child's actions and respond to his attempts to communicate rather than dismiss those attempts as disruptions. We give students with severe and multiple disabilities extra time to respond and encourage peers to offer these learners a little patience. We focus on communication and connection as the ultimate goal of our time together so that each of us has a voice. Incredible things happen when educators have high expectations for every student.

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ADDED RESOURCES

www.creativecommunicating.com - Pati has developed various communication products that she currently sells. The Dynamic Communication Book, Speaking Dynamically Pro (Pati/Judy pages for Tobii Communicator), AAC2go pages for GoTalkNowApp, and Light Tech Communication Books Pdf files.

Teaching AAC - a resource file for Getting Started with AAC Instruction

www.totaltalkaac.com - Pati consulted on the design and development of Total Talk Communication app. ∎

TactileTalk Toolkit and TactileTalk Guidebook for iPad:

Strategies for Functional Communication and Literacy

The iPad has become a game changer in the field of disabilities. Its low cost, long battery life, touch screen, portability and social acceptance have enabled it to be a powerful and highly used device for students with disabilities. The iPad, particularly, has gained popularity for students who are blind or who have low vision. With incredible built-in accessibility features, numerous available Bluetooth accessories and the ability to make tactile overlays, the iPad can be a multifunctional device for these students.

Tactile overlays on the iPad give students with blindness and low vision the ability to use the same device and applications as their sighted peers. Using low cost materials, such as braille laminate, fabric paint, screen protectors, various fabrics and textures, tactile overlays can be created for a plethora of skills and activities. These include creating interactive books; adapting commercially made interactive books; creating diagrams for scenes, routes, maps and science; adapting a talking calculator; creating pre-braille and braille tracking activities and matching activities; and creating tactile symbols for communication systems.

Rowland and Schweigert (2000) noted that tangible symbols fit into the progression of communication, from pre-symbolic or gestural communication to the use of abstract symbols or language. For some students, the use of a tangible symbol system may bridge the gap between gestural communication and a formal language system, but for others it may be their ultimate means of communication. Rowland and Schweigert identified three criteria that indicate whether a student may be ready to use tangible symbols.

JONI NYGARD, MS, CCC-SLP, has specialized in augmentative alternative communication (AAC) and assistive technology (AT) throughout her 30-year career, serving as an SLP in public schools (birth to 21); managing an AAC clinic at the University of Wisconsin-Madison, Trace Research and Development Center; and most recently, developing new AAC products and training materials at the Attainment Company. Joni authored Early Literacy Communication Overlays, a companion book for Early Literacy Skills Builder and co-authored TactileTalk Guidebook, as well as articles in Closing The Gap publications. She also co-authored the What's Cool About Music app. Currently, Joni is Director of Speech & Language Product Development and Director of the Aging Resources Division for Attainment Company, Verona, Wisconsin. Joni is a recipient of the National Braille Press 2015 Louis Braille Touch of Genius Prize for Innovation: Tactile Talk Toolkit-Strategies for Functional Communication and Literacy.

DR. BETSY FLENER received her doctorate from Vanderbilt University in 1992 with a specialization in visual impairments and multiple disabilities. She is currently a low vision education specialist and assistive technology specialist for the Green River Regional Educational Cooperative. With over 25 years of experience working with visually impaired students, including serving as a regional consultant for Kentucky School for the Blind, she has presented nationally on such topics as Septo-optic Dysplasia, technology, advocacy, self-determination, keyboarding skills, the iPad for students with multiple disabilities, Response to Intervention (RtI), and literacy for students with multiple disabilities. Dr. Flener is a recipient of the National Braille Press 2015 Louis Braille Touch of Genius Prize for Innovation: Tactile Talk Toolkit-Strategies for Functional Communication and Literacy.

- The student has the fine motor skills needed to indicate their choice of symbols.
- The student understands they can influence the behavior of another person through pre-symbolic means. This includes pointing, touching, hand guiding, tugging, vocalizations or facial expressions.
- The student does not already use an abstract symbol system to communicate, or the environment does not support the current system used (e.g., the student uses signs, but others do not know sign language).

With the addition of tactile symbol overlays, the iPad can be the "perfect" device to provide the auditory feedback that tactile communicators need. Taking into consideration the research and needs of their students, the authors of this paper created TactileTalk. TactileTalk Toolkit and TactileTalk Guidebook for iPad: Strategies for Functional Communication and Literacy is the first tactile communication and literacy system utilizing voice output to be developed for the iPad. It was developed because of the need for a lightweight, portable, easily accessible, inexpensive and tactile communication system that could incorporate voice output. Development was based on field tests and best practices in the fields of augmentative and alternative communication and visual impairment and blindness.

Within the field testing, students had opportunities to determine if symbols were identifiable and representative of the communication and literacy concepts being taught. Students, teachers and therapists provided valuable information that authors further contemplated and thoughtfully considered during the development process. Clearly, a system was needed to provide a tool for individuals to begin teaching functional communication and literacy skills

This unique system was the result of a two-and-a-half-year collaboration by
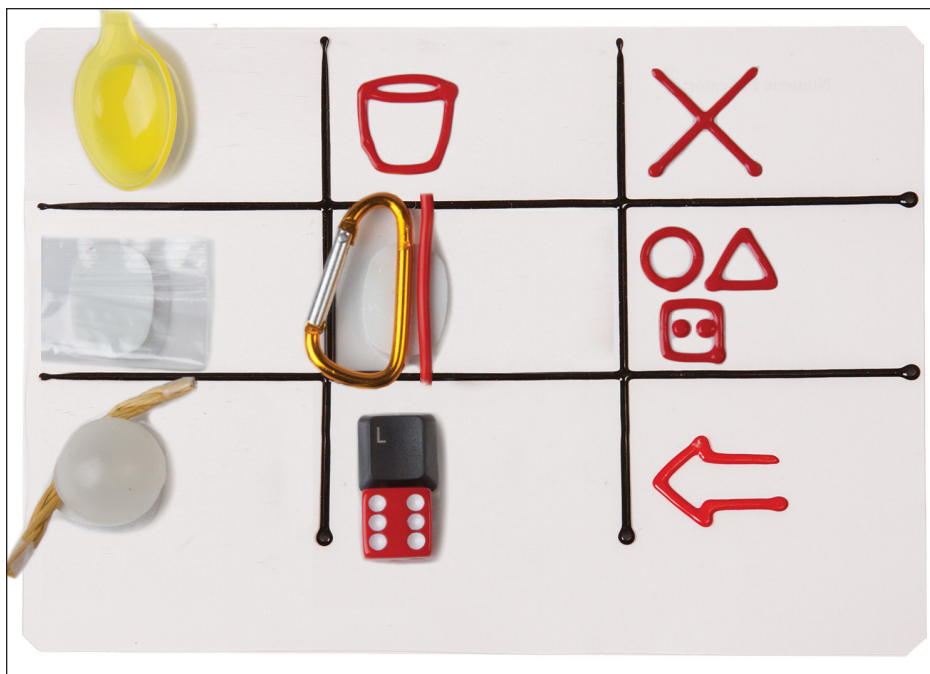

Image 1: Main Menu Overlay used to teach navigation to language and literacy concepts

a specialist with over 30 years of experience with students with visual impairments, including those with multiple disabilities, and a specialist with 30 years of experience in augmentative and alternative communication. Research has shown that the use of tactile symbols is an effective approach in educating students with visual and multiple disabilities. Tactile symbols have been widely used for many years. Although various studies have cited the need for voice output to accompany tactile symbols systems, until now no viable, portable system has been available. TactileTalk is produced by the Attainment Company and began shipping in January 2016.

RATIONALE

TactileTalk was developed by first examining the communication needs of visually impaired students with additional challenges. Those needs include the ability to request, make choices, protest, comment and greet. Second, the sensory and social needs of this population were considered. Preferred items and activities for this population were selected for choices. It is noted that this

population is often limited because of physical challenges, experiences, the awareness of visual information, time constraints and motivation (Erin, 2013). (See image 1)

Besides communication functions, TactileTalk also incorporates the use of routines, concepts, orientation and mobility and an adapted book. Routine-based learning has proven to be the best way for a student with multiple challenges to learn, because it is the framework in which all parts of the learning experience have an organized connection. Routines provide structure, are consistent and follow a predictable order. Routines integrate skills and concepts in the areas of adapted communication, tactile and visual modeling, orientation and mobility, literacy, math and sequencing. Routines can also change as the child progresses (Rodriguez-Gil, 2010). (See image 2)

A rich base of experiences is essential to develop a foundation for literacy and a wide range of vocabulary and concepts for functional communication. A visual impairment limits the ability to learn incidentally and have access to opportu-

nities for naturally occurring experiences. Therefore, visually impaired children often need hands-on experiences to learn basic concepts, such as size, shape, position, time and classification (Lavigne, 2005). Knowledge of these concepts is considered a prerequisite for learning braille. TactileTalk incorporates pages that introduce and reinforce concepts, including size, shape, position, texture and counting. (See image 3)

Independent movement is important for all children, especially for children who are blind. Children who are blind are often reluctant to move in space. Children typically orient themselves according to the landmarks and features they encounter in their environment. Specific routes with natural landmarks and cues help these children confirm their location and progress to learning additional routes. Also, because these children orient themselves better in predictable and well-organized environments, the organization and layout of space is typically kept constant (Orientation and Mobility for Children Who Are Deaf-blind, n.d.). TactileTalk includes its own location page with an example of a simple map that is a familiar route within a classroom. (See image 4)

Communication is the foundation of literacy, and the acquisition of language and literacy is social. Literacy learning occurs through meaningful interactions, experiences and activities. Literacy learning in TactileTalk takes shape through routines, concepts and locations. In addition, TactileTalk includes an adapted storybook. It is noted that many commercially available books are not accessible to blind children with multiple disabilities, making it necessary to adapt books to meet the needs of the individual learner. Modifications are often needed to make the book interesting and meaningful to the learner. Examples of modifications include simplifying the content, adding pictures or tactile symbols or increasing the contrast (Weismer & Leech, 2008). The well-known storybook,
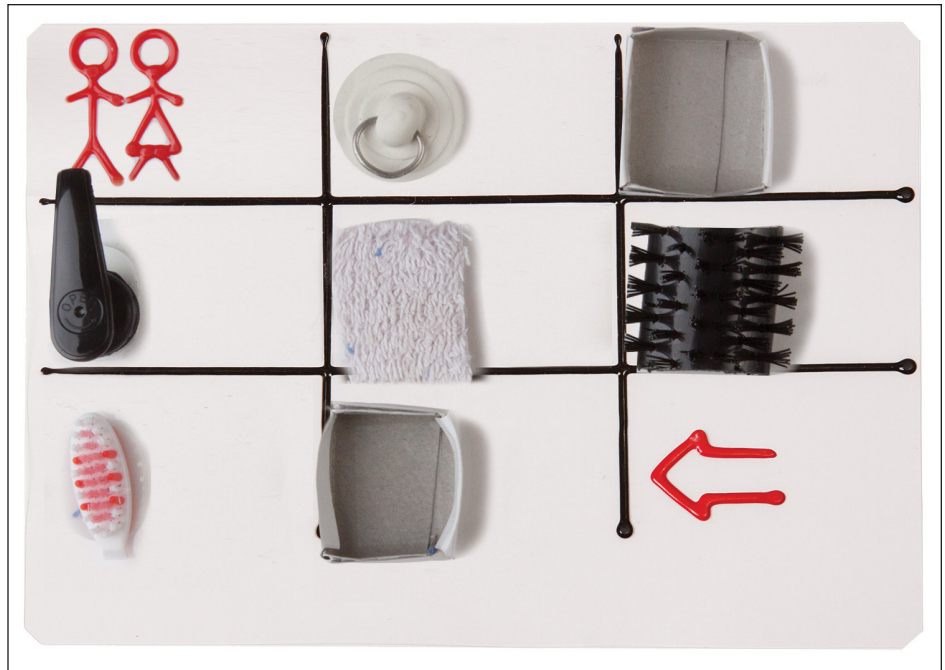

Image 2: Grooming Routine Overlay provides vocabulary for student to participate in grooming routine.
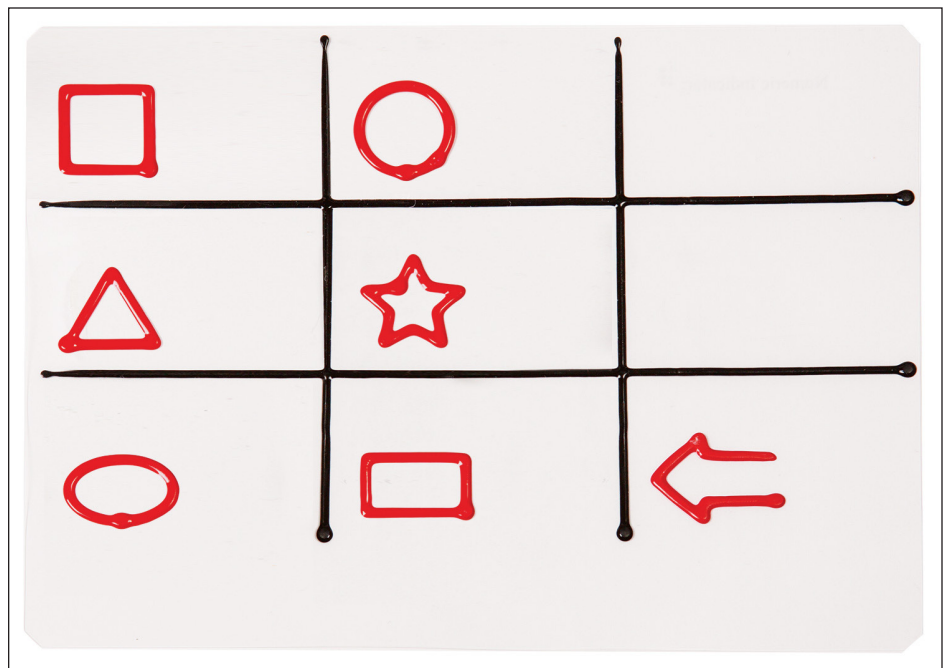

Image 3: Shapes Overlay to teach early literacy concepts.

Charlotte's Web, is included in TactileTalk, using simplified narration and pairing it with tactile symbol overlays. Books adapted with tactile symbols also help a child achieve readiness for braille reading (Hunt & Marshall, 2012). (See image 5)

COMPONENTS

The TactileTalk Communication and Literacy book works with the GoTalk NOW (GTN) app. The toolkit includes a 25-page communication and literacy book, entitled TactileTalk that is an in-app and can be downloaded within

the GoTalk NOW app, 25 pre-made tactile overlays, five blank customizable overlays and a 116-page guidebook. The beauty of TactileTalk is that it is a standardized system that can be individualized and customized to meet the needs of the student. The button pages of TactileTalk were developed with a 3x3 array, totaling nine cell locations. This was found to be the most successful for the amount of tactile input needed. Also, it is noted that many beginning communication systems have an array with nine cell locations. Also, each cell location includes a print and picture label.

The Main Menu page of the Tactile-Talk Communication and Literacy book includes these categories: eat, drink, stop/help, routines/stories, sensory break, concepts/categories, motor fun, free time and return to the main menu. A tactile overlay was developed for this array that includes objects, pieces of objects and tactile paint. The objects and pieces of objects are adhered through the use of a low profile industrial strength hook and loop fabric (Velcro). TactileTalk support is an incredible feature developed and enabled within the GTN app settings under Experimental Features. When enabled, it allows the left 60% of the cell location to be deactivated. The beauty in this is that it allows the user to touch and feel the object and ensure the choice without activating the iPad. Then the user taps to the right of the object to elicit an auditory cue to confirm selection and/or indicate the choice to activate the voice output. The message can be activated instantly if auditory cues are not necessary and turned off for a student who primarily uses only the tactile cue or location to determine the message.

All the pages of TactileTalk are linked together, and the first six pages represent the communication book. These first pages all use the "button page" feature of GoTalk NOW. An example of how pages are linked is that when the piece of the spoon for "eat" on the Main Menu is selected, the second page of TactileTalk
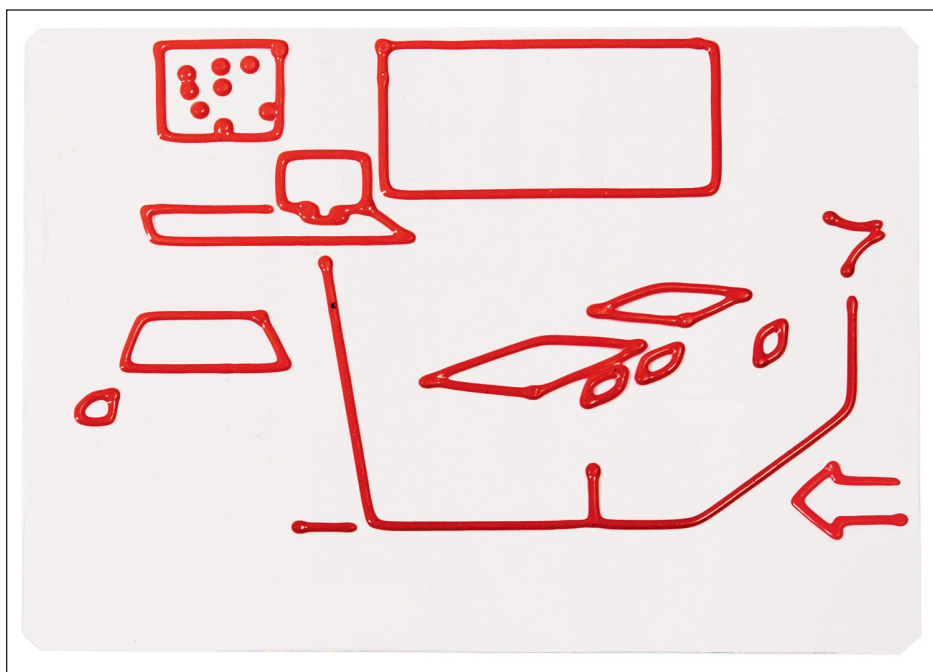

Image 4: Locations Overlay, in this example, a classroom for student to learn locations within an environment.
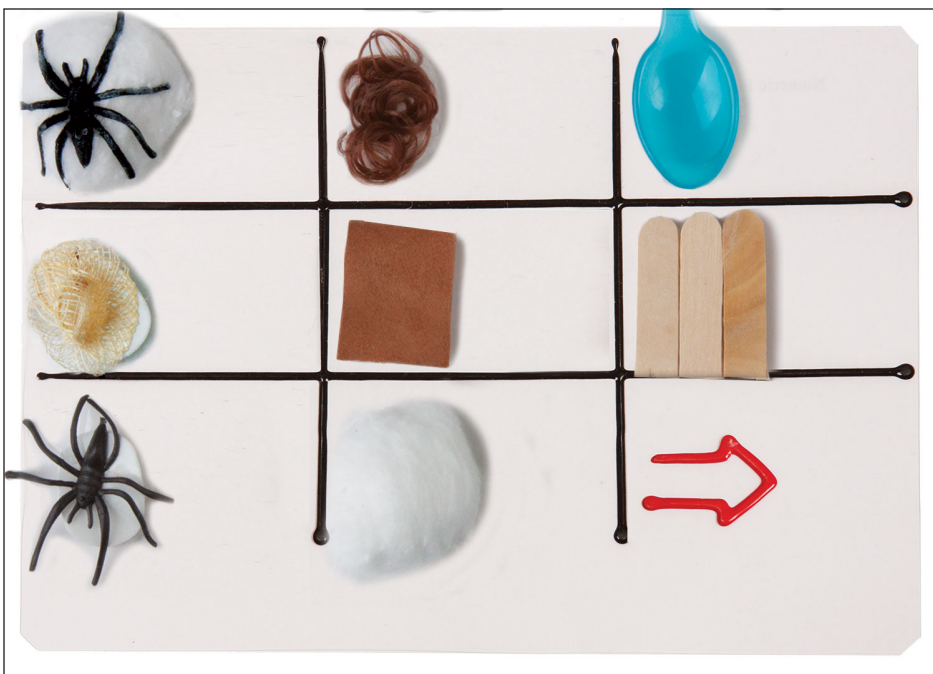

Image 5: Story with Symbols Overlays provides tactile cues to read an adapted story, *Charlotte's Web*.

is then displayed. The tactile overlay can then be changed to an overlay for page two, which includes pieces of objects and painted diagrams that represent various snacks. The student would then select the snack they would like. All pages,

except the Counting Page and the Charlotte's Web story, include a cell location at the bottom right with a raised outline of an arrow pointing to the left. When this is selected, the page returns to the Main Menu. The Charlotte's Web page

includes a bottom right cell that has an arrow pointing to the right in order to turn the page of the book. The "button page" feature was also used to create the Routines pages, Concepts and Categories pages and the Charlotte's Web narrated book.

The "scene page" within the GoTalk NOW app allows for multiple hotspots, including unlimited recordings or text-to-speech. This feature was used to create overlays teaching locations, body parts and facial parts. For example, when using the Locations page, the student can tap on various parts of the overlay to hear various landmarks within the classroom.

TactileTalk was developed with simple navigation in mind. For communication and choice making, it was developed so that no more than two overlays are needed for a communication exchange. In some areas, including concepts, routines, categories and the storybook, three different overlays may be required to arrive at the final choice. The overlays are designed to teach early literacy skills and communicate basic needs and concepts.

TACTILETALK GUIDEBOOK

The TactileTalk Guidebook is a complete, 116-page document that provides valuable information to the teacher. First, it describes tactile/tangible symbols and provides a composite of the plethora of research in the use of tactile/tangible symbols. Second, it provides information pertaining to the use of standardized symbols versus an individualized system. Third, it provides information and examples of how to teach tactile or tangible symbols. Fourth, it provides information regarding routine-based learning. The last 50 pages of the guidebook provide examples of how TactileTalk can be customized for various learners. Overlay and communication page examples are included to serve many populations, including students who are blind and have autism, students with cortical visual impairment, students

who are more advanced and use tactile symbols regularly for their high school schedules and classes, and students who have more significant needs. Fifty-eight picture examples with descriptions for the blind reader are included. For students who are not ready for a variety of overlays, there are examples on how to create one communication page that could represent a student's entire day.

TactileTalk can also be considered a foundation for the transition to braille reading. The goal of tactile or tangible symbols is to provide initial tactile literacy opportunities with the goal that many students will use the tactile input to transition to braille. The guidebook includes examples of customized overlays for students transitioning from tactile symbols to braille, developing an experience story for a young user, and teaching core vocabulary in combination with the braille alphabet.

TactileTalk Toolkit was developed to be used by all teachers, including those with low vision and those who are blind. The guidebook is printed in large print with picture descriptions and is available electronically for the blind user. The communication book has large print with high contrast features. VoiceOver can be used in addition to the auditory cues built into the app.

Since its release, TactileTalk has received a lot of attention. It truly is quite an innovation for students who are blind or have low vision with additional disabilities. Also, it has gained attention for use with young children with visual impairments. Recently, it received the coveted National Braille Press Louis Braille Touch of Genius Prize for Innovation.

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Four New Accessibility Features of iOS 10 You Should Know

Apple has released iOS 10, the latest version of its operating system for mobile devices, such as the iPad and iPhone. This article is a quick review of some of the most significant enhancements to the accessibility support in iOS 10, starting with a brand new feature called Magnifier.

MAGNIFIER

With Magnifier, users who have low vision can use the great camera on their devices to enlarge the text in menus, pill bottles and other items where they might need a little support for their vision to read the content. Magnifier is found alongside Zoom (which enlarges on-screen content) in the Accessibility Settings. Once it is enabled, you can activate the Magnifier by triple-clicking the Home button.

While a number of existing apps, such as Vision Assist and Better Vision, provide similar functionality, having this functionality built into the OS should improve performance (through faster focusing, better clarity made possible by accessing the camera's full native resolution, etc.). Magnifier has the following options:

- a slider for adjusting the zoom level (or you can pinch in and out on the screen)
- a shutter button that freezes the image for closer inspection – you can then pinch to zoom in on the captured image and drag on the screen with one finger to inspect a different part of it
- a button for activating the device flash (on devices that have one) in torch mode so that you get a bit more light in a dark environment
- a button for locking the focus at a given focal length
- a button for accessing a variety of filters or overlays

The available filters include: white/blue, yellow/blue, grayscale, yellow/black and red/black. For each of these, you can press the Invert button to reverse the colors, and you can do this while in the live view or with a frozen image. Each filter also provides a set of sliders for adjusting the brightness and contrast as needed.

Watch a demonstration online at: https://youtu.be/gly0_2-yGbg

DISPLAY ACCOMMODATIONS

Display Accommodations is a new section in the Accessibility Settings that brings together a few existing display options (Invert Colors, Grayscale, Reduce White Point) with a couple of new ones (Color Tint and and options for three different types of color-blindness).
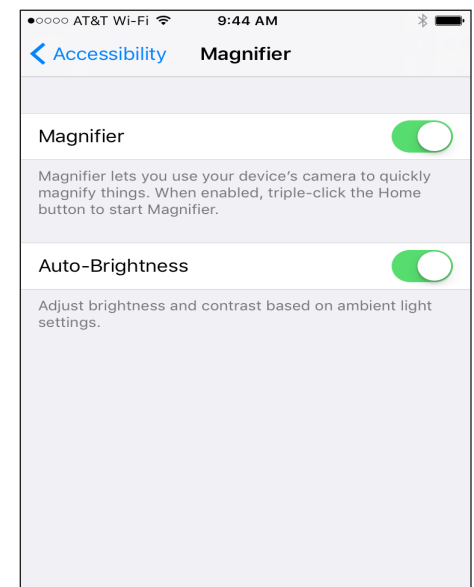
Magnifier settings in iOS 10

LUSI PEREZ, Inclusive Learning Consultant, Apple Distinguished Educator, Google Certified Teacher, mobile learning and accessibility advocate, Author of Mobile Learning for All, ISTE Inclusive Learning, St. Petersburg, FL. Visit luisperezonline.com to learn more. Follow Luis on Twitter @eyeonaxs

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Color filters pane has options for Grayscale and color blindness filters.

For those who have Irlen Syndrome (Visual Stress), there is a new option in iOS for adding a color tint over the entire display. Once you choose this option, you will be able to use a slider to specify the intensity and hue of the filter.

Color Filters with sliders for intensity and hue.

SPEECH ENHANCEMENTS

In addition to word-by-word highlighting, the text-to-speech options in iOS 10 (Speak Selection and Speak Screen) will now provide sentence-by-sentence highlighting, as well. By choosing Highlight Content in the Speech Settings, you can configure how the highlighting takes place: you can have only the words highlighted, only the sentences, or both, and you can choose whether the sentence highlight will be an underline or a background color (though you still can't choose your own color).

A new Typing Feedback setting can help you if you find you are often entering the wrong text. You can choose to hear the last character or word you typed (or both). For the character feedback, you can specify a delay, after which the character will be spoken and even whether a hint ("t, tango") is provided. An additional setting allows you to hear the QuickType suggestions read aloud as you hover over them, to make sure you are choosing the right prediction.

The entire Speech system also can take advantage of some additional high quality voices: Allison, Ava, Fred, Susan, Tom and Victoria for U.S. English. Some of the voices (such as Allison) have both a default and an enhanced version, as has been the case with previously introduced voices, and you preview each voice before downloading it by tapping a play button. An edit button allows you to remove voices you are not using if you are running low on space (you can always download them again).

Watch a demonstration online at: https://youtu.be/hIHGsDqu7TU

VOICEOVER PRONUNCIATION EDITOR AND NEW VOICES

I'm sure the team at AppleVis will do a complete rundown of VoiceOver in iOS 10, so here I will just highlight one feature that I am really happy about: the new Pronunciation Editor. After all this time, I can finally get VoiceOver to get a little bit closer to the correct pronunciation for my name (the accent in Pérez still throws it off a little).

The Pronunciation Editor is found under VoiceOver > Speech > Pronunciations. Once there, you will press the Add (+) button, enter the phrase to be recognized and then either dictate or spell out the correct pronunciation. You can restrict the new pronunciation to specific languages, voices and apps or choose All for each option for a more global availability.

Watch a demonstration online at: https://youtu.be/E1t1UqOfXtA

In addition to the pronunciation editor, VoiceOver can take advantage of all the new voices for the Speech system in iOS 10: Allison, Ava, Fred, Susan, Tom and Victoria for U.S. English (each with an enhanced version). Like the Alex voice, you will have to download each of these new voices before you can use it, but you can preview each voice before downloading it.

These are just a few of the new accessibility features in iOS 10. Others include:
- the ability to auto-select the speaker for a call when you are not holding the iPhone to your ear.
- an option for routing the audio for VoiceOver: you can hear the speech on one channel and the sound effects in the other when wearing headphones.
- Switch access for Apple TV, which will allow you to navigate the interface of the Apple TV using the Switch Control feature on your iOS device.
- a new option for Switch Control Recipes that will allow you to create
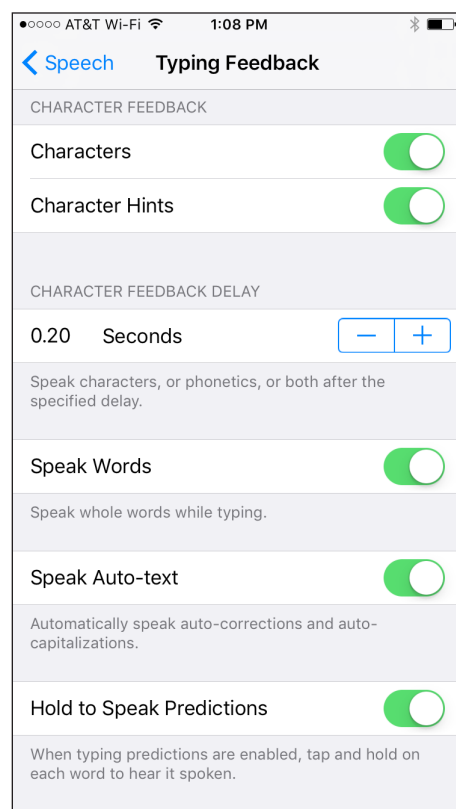
Speech enhancements settings in iOS 10

a hold on point action right from the scanner menu. Before you could only crate a tap action in this way.

And of course, there are other enhancements to the rest of the Apple ecosystem that I will cover in their own blog posts as they become available: Siri for the Mac, Taptic Time for Apple Watch, new activity settings on Apple Watch for wheelchair users and more.

Finally, there is the new hardware Apple just announced that will soon be shipping. Apple Watch has a faster processor and a better display (helpful for those with low vision), and the iPhone 7 and 7 Plus come with even better cameras (12 MP, with two cameras for 2X zooming on the larger model). As both a visually impaired photographer and as someone who focuses on accessibility features that use the camera (Magnifier, Optical Character Recognition apps to convert print into digital content), this is very exciting. ∎

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Quick Tip: New Visual Supports For Chrome OS Users

I was pleasantly surprised when I recently updated my Chromebook to the latest version of Chrome OS (version 54 at the time of writing). Whenever I do an update, one of the first things I do is go into the accessibility settings to see if any new options have been added. In the latest version of Chrome OS, Google has provided a number of visual supports that I am finding helpful as a person with low vision. For example, there is now the option to enable additional highlighting (a red circle) when the mouse cursor moves. This kind of additional visual cue makes it much easier for me to use the interface.

To enable the new highlight options, go to Settings > Show Advanced Settings > Accessibility. The new options are as follows:

• Highlight the mouse cursor when it's moving (image 1): the cursor will be surrounded by red circle whenever it moves. There is already an option to enable a large cursor, but that can cause problems whenever you are trying to check a small box (as often happens on dialog boxes). With this additional highlighting added to the mouse cursor I can still find it on the screen even if I need to temporarily set it to its default size.Mouse cursor with red circle around it to indicate movement.

Image 1: Highlight the mouse cursor when it's moving.

LUSI PEREZ, Inclusive Learning Consultant, Apple Distinguished Educator, Google Certified Teacher, mobile learning and accessibility advocate, Author of Mobile Learning for All, ISTE Inclusive Learning, St. Petersburg, FL. Visit luisperezonline.com to learn more. Follow Luis on Twitter @eyeonaxs

- Highlight the object with keyboard focus when it changes (image 2): this is really helpful when interacting with form fields. Whenever a text field or other form element gets focus it is surrounded by a thick yellow border. Chrome's Search settings text field with yellow border around it to indicate it has focus.

- Highlight the text caret when it appears or moves (image 3): adds a blue circle around the text caret. I did not find this setting as useful, maybe because there is not much space between the text caret and the highlight.Blue circle around the text caret to draw attention to it as it moves.

- New animation for auto-click (image 3): as the circles get smaller, this indicates how much time is left before the auto-click takes place.New auto click animation: the circles get smaller to indicate how close it is to the auto click

There is some room for improvement with these visual supports (for example, the option to change the colors), but overall I think this is a good addition to Chrome OS. The options for highlighting the moving cursor and keyboard focus are going to always be turned on on my Chromebook. ■
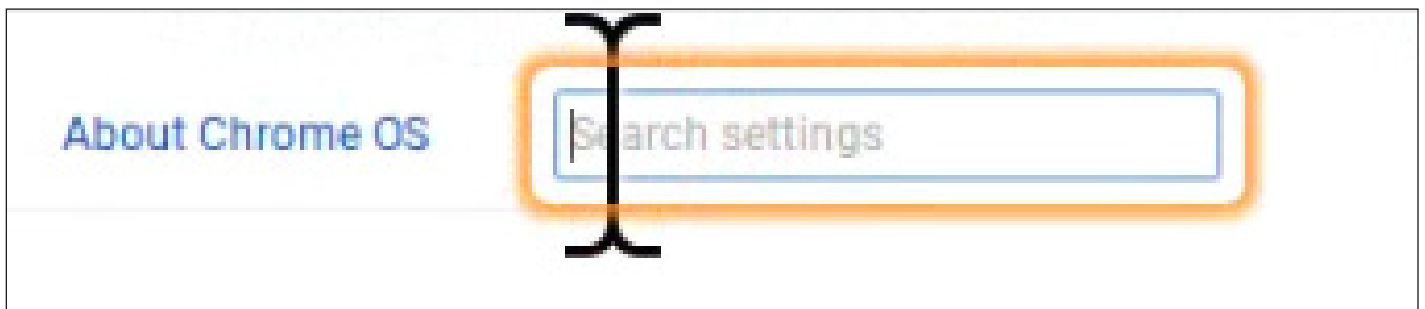
Image 2: Highlight the object with keyboard focus when it changes.

Image 3: Highlight the text caret when it appears or moves.
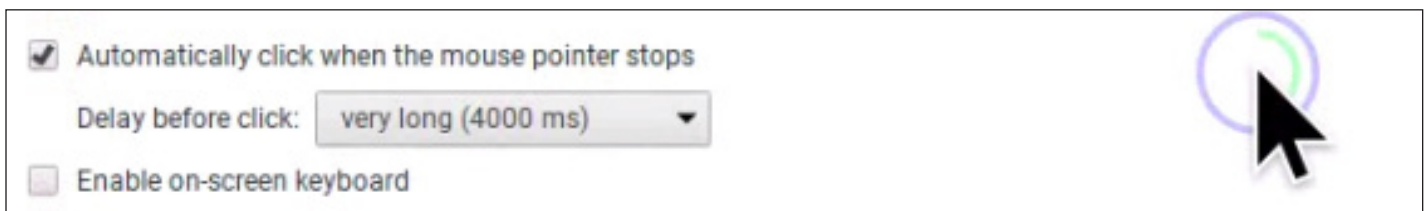
Image 4: New animation for auto-click.

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2016 Assistive Technology Success Story Winner:

"Hurry Up! Let's Go!"
Using Play and Communication to Lead a Community

Marshall is a three-year-old student who is a nonverbal communicator in the Plano school system. Plano, Illinois is a town of approximately 10,000 residents. Students receiving special services were previously supported by another program, however, this year, 2016, is the inaugural year of the Plano Area Special Education Cooperative (PASEC). Marshall began school without a means to communicate his wants, needs or ideas. Though he has a complex medical history, including a diagnosis of cerebral palsy, it has not dampened his spirit or his love of play. At the time he began early childhood services, Marshall reached between or towards objects, looked at items or used his trademark "twinkling" smile to try to obtain items. Having had some previous experience with assistive technology and complex communication needs, Director Amy Lee recognized that providing for his communication was essential. She made provisions to have specialized AT services and support for

Marshall is now using a clear point with direct selection to access his book.

Marshall provided by Kristy Gibson, M.A., CCC-SLP/L. In addition, PASEC generously supported Marshall in accessing needed tools and services for AT.

PLANNING IMPLEMENTATION

A planning meeting was held with Marshall's family and full team. This was key to developing a wrap around system of communication, or a full range of options to enable his communication

across classroom activities. In addition to Marshall's individually assigned tools, the classroom was assigned software programs, including Boardmaker Online, which provided for support of symbol connections (reading, curriculum connections) and available at http://www.mayer-johnson.com/. This has allowed for the entire group to develop their literacy skills; Marshall is immersed in a culture of symbol and text learning. When Marshall's entire class participated in a bus drill, Marshall participated too. He took his book with him and later that day, he told the story of what happened (bus driver, transportation, drive, bus).

PLANNING A BACKUP STRATEGY

For those familiar with a typical early childhood classroom, communication happens rapidly and at the "speed of play." Marshall's classroom utilizes the Creative Curriculum. One of the driving questions utilized to help determine what

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KRISTY GIBSON is a licensed speech language pathologist, special educator and assistive technology provider who has been supporting students with diverse special needs since 1997.

AT SUCCESS STORY CONTEST: *Closing The Gap will recognize two individuals / AT teams, whose AT success stories exemplify the role AT can have in the lives of individuals with disabilities. To learn more about submitting visit www.closingthegap.com/atsuccess/*

would best help him was "What could help Marshall succeed in communicating in a spontaneous and flexible learning environment without a predetermined curriculum?" In the fast-paced and play-driven preschool environment, language changes at a moment's notice. Marshall's team followed a SETT process, feature matching his language, vision, physical and environmental needs collaboratively with his full team, including his family. They determined that his tools needed to be peer friendly and accessible. Curriculum accessibility was a key feature since Marshall had not been exposed to many symbols; symbols are a significant part of his school environment. It was determined that Marshall would benefit from use of a PODD communication system, as well as developing symbol literacy in the classroom. Boardmaker Plus (CD) was utilized with PODD templates to modify and print a 15-location auditory scan PODD, low tech communication book. At the time, Marshall was unable to directly access a device or book with his hands, so his book was developed to be an "auditory scan" book. This book goes with Marshall everywhere in the classroom and hangs from his chair, traveling with him throughout the building. Single activity pages are also printed and laminated for messy or specific areas (e.g., water table) and available for peers to use, as well.

Marshall's interest in communicating with teachers, family and peers was immediate, and he began signaling that he had something to share by waving a hand. Given trial access to a copy of Tobii Dynavox Compass PODD software, Marshall showed that the time spent by this team modeling and using his PODD was well spent, as he quickly adapted to using his eye gaze device (i12). As Marshall's PODD use and AAC device use continued, he developed his own hand gesture to indicate that his book vocabulary needed to be modified, or "add that to my list." In other words, he needed vocabulary added that was not currently

"Add it to my list"; Marshall asks for words to be added to his book.

in his book. Marshall has been a continual and active participant in editing and adding to his own vocabulary!

PRACTICAL IMPLEMENTATION: WHAT NEXT?

Marshall's classroom teacher has celebrated his communication success during professional meetings, sharing the importance of using and modeling communication with other early childhood teachers. Other students are now also being exposed to PODD and enjoying new communication opportunities thanks to Marshall's experiences. Some of the practical strategies used to help bridge the gap for support staff who are new to using AAC include an in-person check-in at the beginning of the week and a sibling check-in time so that Marshall's siblings can take his communication skills home. Check-in times are also scheduled for his primary paraprofessional, with a written "modeling" and followup note to given "targets" for models. Since Marshall's movement patterns are complex and can change from day to day, co-treating

sessions are scheduled periodically so that other staff working with him (OT, PT) are familiar with how to use his tools. A "parking lot" of needs/questions is also maintained so that instruction isn't interrupted for routine questions. Marshall is offered choices between his book and dynamic device, and can go back and forth between using both. One of the ideal features available to staff with the Compass PODD application is that editing can be done on an iPad quickly, and in a portable format. This enables staff to edit and model for Marshall, even while he's accessing eye gaze or attending to modeling. We do not have to take his device away to program, upload or backup his vocabulary. Whether he's questioning the kinds of pets ocean animals might make as part of a whole group discussion, or pondering who might win the next candy castle game, Marshall is a curious and thoughtful communicator. Having experience with PODD enabled him to seamlessly begin use of a Tobii ISeries device (i12). Marshall suggests play scenarios (Let's pretend) and reminds his staff that speed is of the

essence ("Let's go hurry up"). Now that he has access to vocabulary limited only by his imagination and that of the imagination around him, Marshall has opened up his world and the world around him. He recently asked to pretend…"Let's pretend..right now…airline tractor drive suitcases truck load on airplanes".

USING VOCABULARY STRATEGIES

Marshall's team is using specific strategies to help him and the team around him make connections and learn how to use AAC. They are making connections between tools (remember on your device…, remember that was in your book…. remember we added that to your list). Basic visual mapping is used to help show "how to get there" or the path to a message. Whenever possible, the team uses aided language stimulation with the team directive that modeling be used as frequently as possible.

In only a few short months, Marshall has "hurried up" and became a competent communicator, chatting with anyone he can find who will take the time to use his PODD or communicate with him. His staff are excited and honored to have been at the start of his AAC journey and look forward to his accomplishments in the future. ■

Communication Matrix Virtual Community of Practice: Join Us!

" Finley has become a great communicator in her own right using very 'unconventional' communication methods. The Matrix has given us comfort to work within her strengths and abilities and not feel confined to standard methods." ~ Parent of Finley

"

This statement is exactly the positive perception of a complex communicator that Communication Matrix Community of Practice grant director, Dr. Charity Rowland, Ph.D., has been working towards since 1990, when the first printed version of the Communication Matrix Assessment was published. Through federally funded research grants, the printed version grew in 2004 as it added an online version with dynamic comparison views of multiple assessments of the same student over a variety of dates. In 2011, an effectiveness study brought together the matrix with positive student outcomes. https://www.communicationmatrix.org/Matrix/About

In 2014, a five-year study began to create, launch and optimize an online Community of Practice to sustain the communication and support between educators, families, researchers and anyone seeking information around the Communication Matrix. It is this study that gained the attention of Finley's parents and those of Alex, a schoolmate of hers, who when asked "What advice do you have for other parents/teachers/SLPs to encourage them to take a look at

Finley in her classroom at Kirk School.

GAYL BOWSER, M.S. Ed., is anindependent consultant and is an adjunct faculty member for the University of Wyoming's Wyoming Institute for Disabilities (WIND). Her work focuses on the creation of service systems that encourage the integration of technology into educational programs for students with disabilities. Formerly the Coordinator of the Oregon Technology Access Program (OTAP), Gayl currently provides assistive technology consultation, training and technical assistance throughout the United States and internationally. Gayl has co-authored numerous publications about assistive technology, including Quality Indicators for Assistive Technology: A comprehensive guide to assistive technology services; Education Tech Points: A Framework for Assistive Technology; and Assistive Technology Pointers for Parents.

KELLY FONNER is a self-employed consultant in assistive and educational technology. She is a Special Educator and has a Masters in Educational Technology with emphasis in Rehabilitation/Special Education. Since 1986 she has presented to schools, universities & families in 48 states & internationally on AT, augmentative communication, computer access & electronic literacy.

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the Communication Matrix Community of Practice?"

Alex's mother responded, "Try it out. It does help your child with communication."

THE COMMUNICATION MATRIX

https://www.communicationmatrix.org/Community

The Communication Matrix is a free assessment tool created to help families and professionals easily understand the expressive communication status, progress and unique needs of anyone functioning at the early stages of communication or using forms of communication other than speaking or writing. Both Finley and Alex attend the Chicago area Kirk School, part of NSSEO (Northwest Suburban Special Education Organization), which is beginning its fourth year of participating in this federally funded research grant. Just like their general education peers, these girls' experience a change in teachers, and in addition, they also can have new teaching assistants, as well as new speech/language pathologists and other related services. Making sure that each new staff person doesn't start all over again with a new communication system that is more about the adult than it is about the student is a critical component of service delivery to students with complex communication needs (CCN).

Sometimes the Communication Matrix is the first piece of recorded information that a staff member can refer to when needing a quick look at how a new and/or incoming student expressively communicates, not just their wants and needs, but also, how social they are, how they get attention, how they express displeasure and how they answer and ask questions. It is available in English, Spanish, Chinese, Czech, Korean, Russian, Vietnamese and is currently being translated into several other languages.

The Matrix was inspired by important research that came from a "pragmatic" approach to communication development that was first discussed by Elizabeth Bates and her colleagues. This approach considered what the child achieves by using many different behaviors to communicate, rather than just looking at speech. Another influence was the work of Heinz Werner and Bernard Kaplan. They viewed the emergence of symbolic communication as a developmental process that is a natural outgrowth of early relationships between mothers, infants and the objects or events in their environment. The Matrix was developed using these principles, paired with extensive hands-on clinical research involving individuals with complex communica-

Legend: Not Used (white), Emerging (yellow), Mastered (orange), Surpassed (gray)

	C1 Refuses or Rejects Something	C2 Requests More of an Action	C3 Requests a New Action	C4 Requests More of an Object	C5 Makes Choices	C6 Requests a New Object	C7 Requests Objects that are Absent	C8 Requests Attention	C9 Shows Affection	C10 Greets People	C11 Offers Things or Shares	C12 Direct Your Attention to Something	C13 Uses Polite Social Forms	C14 Answers "Yes" and "No" Questions	C15 Asks Questions	C16 Names Things or People	C17 Makes Comments
Level 1 Pre-Intentional Behavior	A1 Expresses Discomfort	A2 Expresses Comfort (Surpassed) →						A3 Expresses Interest in Other People (Surpassed)									
Level 2 Intentional Behaviour	B1 Protests	B2 Continues an Action (Surpassed)		B3 Obtains More of Something (Surpassed) →				B4 Attracts Attention (Surpassed)									
Level 3 Unconventional Communication	C1 (Mastered)	C2 (Mastered)	C3 (Mastered)	C4 (Mastered)	C5 (Mastered)	C6 (Mastered)		C8 Requests Attention (Mastered)	C9 Shows Affection (Mastered)								
Level 4 Conventional Communication	C1 (Mastered)	C2 (Mastered)	C3 (Mastered)	C4 (Emerging)	C5 (Mastered)	C6 (Mastered)		C8 (Not Used)	C9 (Mastered)	C10 (Emerging)	C11 (Not Used)	C12 (Not Used)	C13 (Not Used)	C14 (Not Used)	C15 (Not Used)		
Level 5 Concrete Symbols	C1 (Not Used)	C2 (Emerging)	C3 (Not Used)	C4 (Not Used)	C5 (Not Used)	C6 (Not Used)	C7 (Not Used)	C8 (Not Used)	C9 (Not Used)	C10 (Not Used)	C11 (Not Used)	C12 (Not Used)	C13 (Not Used)	C14 (Not Used)	C15 (Not Used)	C16 (Emerging)	C17 (Not Used)
Level 6 Abstract Symbols	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17
Level 7 Language	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17
	Refuse	Obtain						Social								Information	

Sample Chart from the Communication Matrix resulting from responses to the expressive communication questions on the communication matrix questionnaire.

tion needs, their caretakers, teachers and speech language pathologists.

The Matrix includes all types of communication, including alternative forms (picture systems, electronic devices, voice-output systems, Braille, sign language and 3-D symbols) and pre-symbolic communication (gestures, body movement, sounds, eye gaze and facial expressions), as well as typical communication (speech). There are four robust communicative function categories that are further subdivided: REFUSAL, OBTAIN, SOCIAL and INFORMATIONAL. It covers seven levels of development in the earliest stages of communication. One must remember that these levels are inclusive of AAC methods and may not reflect a systematic step-by-step process that every child must go through in development (ie: Level 5 Concrete Symbols); some students may progress or surpass through some levels quickly or master only one or two skills in a level before moving to skills in a higher level. For example, some individuals with CCN may move from level 4 to level 6 without demonstrating all skills in Level 5. All communicators are unique, and this was the ambition of the Communication Matrix developers. Grant site facilitator, Kelly Fonner, when challenged by teams who struggle to find communication assessment tools sensitive enough to measure the unique and/or challenging expressive communication skills of their students or children, stresses that no child is too "low" for the Matrix. Children are born on the Matrix. But also remember that the Matrix tops out at 24 months expressively; and how exciting! They've moved on to more traditional communication measurements.

The matrix above is fairly typical in that some individuals will have a scattering of emerging skills intermixed with mastered and skills that are not observed as yet. It is critical to remember that this does not imply that skills not yet observed are to be withheld; in much AAC practice, the role of modeling and aided language intervention strategies are based in demonstrating skills that are in those levels and skill areas that are yet to be observed.

ALEX'S MOTHER:
"This helped a lot when working on new words with my daughter and the words she needed for everyday use."

Student centered teams and individuals who do not have access to teams with expertise are sharing their questions, discoveries and resources about complex communication needs.

The data collection and tracking, including the custom report portion of the online Communication Matrix, creates the opportunity for a smooth transition and sharing of information between staff through the Group Management features. Often in practice with the Communication Matrix, families and professionals may complete the Matrix together, and then may also complete it separately and compare results. Both practices can result in meaningful discussions that result in improved communication practices for children and youth with CCN.

FINLEY'S MOTHER:

"I love this program because the assessments are realistic and are encouraging for parents who are used to having to try to measure up to standard measurement tools. Progress reporting is easy to understand and provides a nice visual "aha"…"

Research demonstrated that using the Communication Matrix suite has a beneficial effect on the development of high quality IEP/IFSP goals related to communication. Data also showed that students are more likely to attain communication-related goals developed by professionals who have used the Communication Matrix suite than goals developed by those who have not used the suite.

ONLINE COMMUNITY OF PRACTICE

The Communication Matrix assessment is designed for use by parents and teachers collaboratively, is popular among professionals and parents alike and helps to improve the educational programs of people with complex communication needs (CCN). However, because the target population is small (low incidence) and widely dispersed, there has not been a means for large groups to work collectively to share the knowledge of this tool or grow collective knowledge of best practices for this population of students. In addition,

online assessment tools, such as the Communication Matrix, make it difficult for users to share their experiences collectively since they may never actually come in contact with each other.

The Communication Matrix Community of Practice (CM-CoP) project was designed to help address these issues and develop a virtual community of practice that supports professionals and family members with the information and coaching they need to improve the communication skills of students with CCN. The CM-CoP provides a sustaining network of users that offers shared support, training and coaching. Student centered teams and individuals who do not have access to teams with expertise are sharing their questions, discoveries and resources about complex communication needs.

Our Virtual Communication Matrix Community of Practice site at www. communicationmatrix.org/community includes an active forum where SLPs, teachers, families, researchers and others concerned with the needs of people with CNN can connect, share information, learn from each other and offer and receive support.

"I love a focus on complex communication needs. Frequently I look at sites or information that does not apply to my students. It is great to have a site that focuses on the students I work with." - SLP

There are many ways to find posts you might be interested in. You can even filter your search using the Communication Matrix profile image and choose any portion of the Matrix Profile to see posts about that topic. Or, type any topic of interest into the search bar. You can search for people, topics and tags.

Once you are logged in, you can create a post or event and add files - pictures, videos and pdfs - and pick tags to specify what your post is about. Much like hashtags on Twitter or Facebook,

tags help other users search for content they wish to explore. You can create an event in much the same way. The only difference is that you need to provide a start and end date/time for the event.

Another feature of the virtual CM-CoP site is Collections. Collections bring together the best of the Communication Matrix Community posts. Guest hosts select posts on a specific topic and annotate them to bring together a body of shared knowledge. Collections address topics such as "A Mom's Musingson Communication in Children w/ Deafblindness" by Heather Withrow and "Behavioral Supports for the Beginning Communicator" by Carol Zangari.

A very unique and exciting feature of the Communication Matrix Community of Practice is Shared Science. In Shared Science, we present aggregate data from the Communication Matrix database. Data summarized from thousands of Communication Matrix assessments provides new information about how people with complex communication needs may communicate. The people who use the Communication Matrix – professionals and family members – contribute valuable anonymous information to our database. We use this data to learn more about communication skills in various populations of people with severe communication disorders. Together, we develop a new and more complete understanding of how people communicate.

The Share Science section of the CM-CoP includes:
- Demographics of our samples so you can see the makeup of the population assessed.
- Functional impairment charts that show the percentage of individuals in this sample who experience specific functional impairments.
- Composite Matrix Profiles based on the entire sample.

- The Mastered view shows the percent of each sample for whom the highest score for each cell was mastered.
- The Mastered + Emerging view shows the percent of each sample for whom the highest score for each cell was EITHER mastered or emerging (this view gives a complete picture of behaviors used to communicate, regardless of proficiency).
- Communication skills of individuals in this sample in relation to the seven levels of communication and four reasons to communicate
- Behaviors used for intentional communication allows you to go into even more depth as to the typical behaviors the sample uses to communicate intentionally (at Levels 3-7).

Since the Community of Practice is designed to crowd-source support for people involved with individuals who have complex communication needs, it has been important to reach a critical mass of participation in order to make the Community truly viable. Dissemination beyond our participating sites is absolutely critical to success. The figure below shows the cumulative increase in website visitors since January 2015. When the Community website first launched, most of the posts were created by our team members. However, over time, the percentage of posts created by our team has steadily decreased, as public participation has increased.

Project impact has by no means been limited to the experiences of participants. The reach of the new website goes far beyond project activities. Below is our latest Communication Matrix Reach Report showing a variety of measures that demonstrate the impact of our activities.

Currently, we are working with our pilot sites and making plans for our involvement with new dissemination sites. Since we will have less direct contact with dissemination sites, we plan to streamline project components
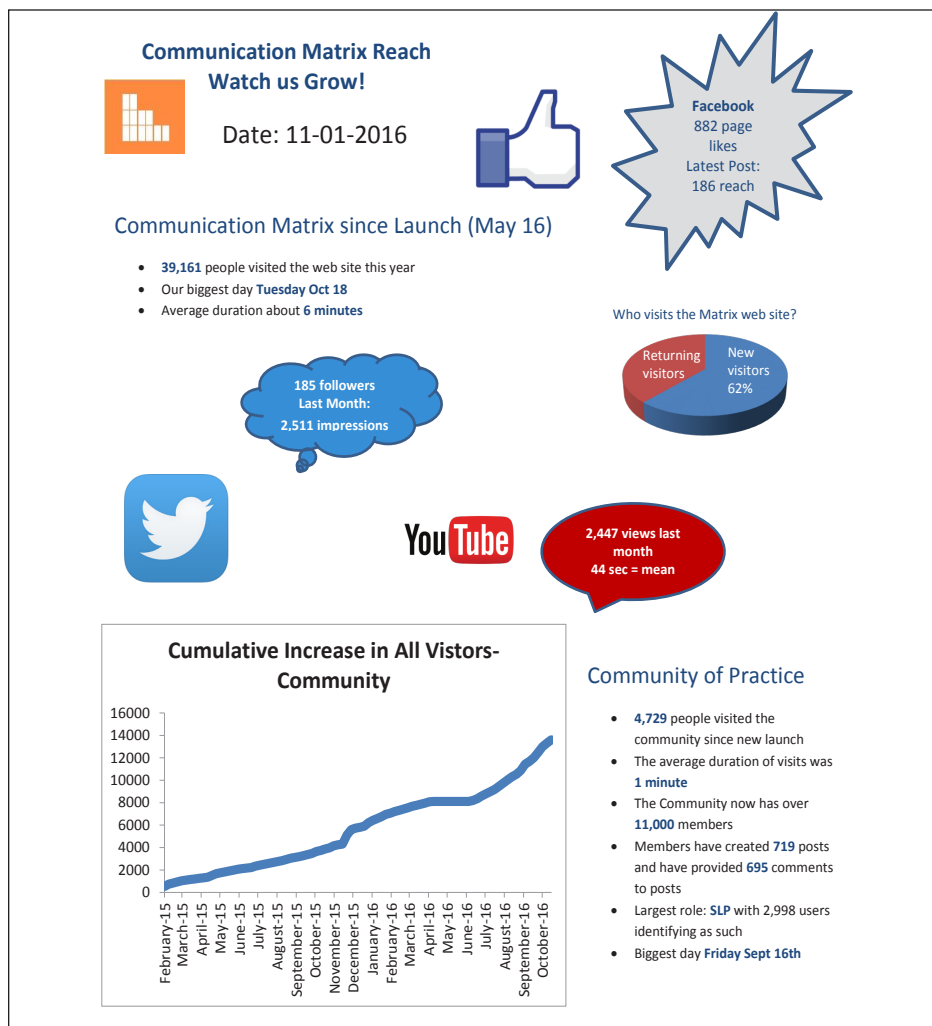
The Communication Matrix Reach Report showing a variety of measures that demonstrate the impact of our activities.

to make it easier for participants to self-manage participation. To this end, we will be creating a virtual portal for all project activities. Participants will be able to login to the portal, find links to all required activities/materials, complete activities through the portal, keep track of their own progress and know what remains to be completed.

Please join us in our efforts to improve communication learning for people with complex communication need. Visit the Communication Matrix website at www.communicationmatrix.org, register with the site and complete your own, free, online assessments. And please, visit the Communication Matrix Community to learn more and network with others who

have a goal to improve communication for people with complex communication needs.

NOTE: If you know someone who would create a great collection, please nominate that person by clicking "Suggest a Guest Host" in the Community site and fill out the form with their email address, name and why you think they would make a great collection. Nominating yourself is always an option! ■

Deep Pressure Therapy:
The Power of Hugs

We all like hugs. They make us feel loved and protected, but there is so much more to it than that.

For many individuals with sensory regulation challenges, the deep pressure input that hugs provide can help regulate their sensory system. Many kids will squish themselves under couch cushions, wear a heavy backpack or crash into the world around them in search of that deep pressure. Why?

It all has to do with the proprioceptive and vestibular systems. There are five senses that we know about: taste, hear, smell, sight and touch. In addition to those five senses, there are two additional senses that are not generally taught in school: the vestibular and proprioceptive senses. The vestibular sense relates to balance, eye movement and motion sickness; it is the perception of our body in relation to gravity, movement and balance. For most of us, we are quite aware of our where our bodies are in space. We can keep our eyes on

the road while adjusting the pressure we apply to the pedals of a car. We can pass a basketball without looking at our hands. We can put a spoon in our mouth without needing a mirror. This is because our entire nervous system is working together to tell us where our body is and we are able to make adjustments to meet the requirements of the situation.

Our development is impacted by our sensory system. Some of us have a very hard time processing different senses. Some children with autism can be under-sensitive (hyposensitive) or over-sensitive (hypersensitive) to certain stimulations. Children with affected vestibular senses often seem clumsy or accident-prone. The proprioceptive sense focuses on knowing where your body is in space – in other words, the positioning of your body parts and how to plan your movement. For example, children with proprioceptive sensory issues may struggle with fine motor activity, like holding a pencil.

LISA'S STORY

This is where the incredible benefits of deep pressure therapy come in.

I began working with kids with autism as a swim and art instructor almost a decade ago. While working with the children, I was continuously developing tools and methods to help them accelerate their learning and reach their potential. While working in the classroom, I saw students use various weighted vests, which provide constant pressure onto the shoulders. It was here that I first discovered deep pressure therapy and its calming and relaxing effect on the students. I began applying pressure in the pool during the swimming lessons, and soon noticed that the hugging action helped them to float much more easily. At that time, I was also attending the university and researching autism. It was through my research that I came across a very special teen named Henry. He was a 16-year-old boy who was non-verbal and autistic and had suffered

LISA FRASER was awarded the BC Creative Achievement Award for applied design from the BC Achievement Foundation in 2013. Her Snug Vest invention and the patented technology she developed from concept to commercialization has been recognized by Autism Speaks, the largest autism organization in the world, and by world-thought leaders, such as Dr. Temple Grandin. Her invention has won numerous international design, medical and technology awards for its design excellence and innovation. v
In 2014, Lisa was awarded BC Business' Top 30 under 30. Lisa has been featured in international press, including Forbes magazine, and interviewed on live national TV.

constant meltdowns, tantrums and self-injury. Henry's difficult story inspired me and ultimately, changed my life. I wanted to help alleviate his pain, so I committed myself to doing whatever I could to make it happen.

I continued to see the great effects of deep pressure therapy, but was concerned with the weighted vest's long-term safety. Was the pressure being placed heavily on the shoulders causing damage to the children's posture and growing bodies? After spending time observing and interacting with the kids, I developed the solution to use air to provide pressure in the form of a comforting squeeze or hugging sensation rather than use weight. By using air to inflate the vest, the pressure is variable, as it is controlled by the wearer, and is able to be adjusted accordingly.

SNUG VEST'S DESIGN

Snug Vest is designed with safety, durability and freedom as its top priorities. It provides an adjustable pressure, as well to give a very hug-like squeeze. The pressure that it provides is evenly distributed throughout the back, the sides and the shoulders of the torso. Snug Vest is also breathable; it has holes throughout the inflatable back bladder to provide ventilation. It is designed to be very ergonomic, which means it actually shapes around your body once you put it on and inflate it. It must be extremely safe; this means there can be no pressure placed on the chest or stomach. The vest has pockets for comfort and storage, as well as a large hood to block out overwhelming distractions or light for those children that are hypersensitive.

Elijah was one of our first testers. He used the vest at therapy sessions with his speech therapist, which can be incredibly expensive – it can sometimes be hundreds of dollars per hour. Elijah's speech therapist said that his sessions drastically improved because he had an increased level of focus. She also noticed that he was much calmer and didn't

screech or rock back and forth anymore – his stimming behavior was reduced. Snug Vest can help improve focus and concentration so the user can get the most out of those sessions.

Eric is another awesome teen with autism – his mom said that the vest has allowed her son to be more independent. Unlike the weighted vest he was using before, he now has the independence to control how much pressure he receives and doesn't need as much assistance in its use. As users get older, this freedom becomes more and more important for both parents and children.

WHAT ARE SOME TOOLS AND TECHNIQUES?

There are many different tools and techniques available for administering deep pressure therapy. Ultimately, there may be trial and error in discovering what works best for each individual. Many new therapies or medications are introduced into the market and not everything will be as effective for one child as it is for another. To list only a few, there are a number of various weighted vests, pressure machines, blankets and swings.

Deep pressure should never be forced upon a person that does not want it. For safety purposes, no pressure should be placed on the stomach or chest. This is something that all care providers agree upon.

Here are a few techniques you can try at home, but please be sure to do so carefully and with supervision. Always consult your care provider, as well.

1. The rolling pin technique. This is a technique that can be done anywhere at home and it is really inexpensive or free if you use items that you already have at home. A caretaker or parent can do this simply by using a pool noodle to roll up and down on a child's back. You can also just use a rolling pin from your kitchen.
2. The burrito roll technique. Wrapping your child in a blanket, yoga mat or carpet can be very calming

and provide pressure throughout the whole body. If you're doing this method, there are a few do's and don'ts. Make sure you're never putting pressure or wrapping the head area. If you're doing a tight wrap, ensure that their arms are outside the blanket. You can also purchase a weighted blanket to assist in this technique. They range between $100 and $160 dollars. An important rule to be considered is to use about 10% of the child's body weight in the blanket. I highly recommend that you consult with an occupational therapist if using the weighted blanket method because it can be quite dangerous if the blanket you're using is too heavy. As always, it should be used under supervision.

3. The hug. Another technique for manually providing pressure is hugging. You can also massage the child, but please ensure to use the flat part of your hand. The Wilbarger Brushing Protocol is another technique to consider. This is a technique where a special brush is used firmly on the hands, legs and back.

HUGS ARE GOOD FOR SO MUCH MORE!

Deep pressure therapy has proven to work for many kids on the autism spectrum in unique ways. It can help increase focus and attention because the sensory system has been regulated. It can also help decrease tantrums or meltdown occurrences, as well as affect their severity and frequency. Deep pressure therapy can help improve social and communication skills, reduce anxiety and induce a calming sensation. Repetitive body movements, such as stimming, hand flapping and rocking back and forth have also been reported to decline.

Many individuals can benefit from deep pressure therapy, not only children with autism, but also individuals that live with fetal alcohol syndrome or post traumatic stress disorder, to name only a few. Deep pressure therapies and Snug Vest are used at therapy centers, clinics and schools, and by private practicing therapists all around the world.

If you would like to learn more, please contact us at Snug Vest. We are always available to answer any questions you may have, and are here to support you in your journey!

Website: www.snugvest.com
Tel (Toll Free) 1-866-530-4440
Fax 1-866-863-4059
c/o: Venture Labs
Attn: Wearable Therapeutics (Snug Vest)
1200-555 W Hastings St
Vancouver BC
V6B 4N6 ■

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PART II:
Command Central for the Brain

The Importance of "Connect-the-Dots" Lessons for Teaching Executive Functioning Skills

In Part One of this article series, published in the October-November 2016 issue, we discussed that executive functioning skills are the true command center of the brain. We reviewed that executive functioning skills help the brain organize and act on information to manage life tasks of all types. For example, executive functioning skills enable students to plan, organize, remember things, prioritize, pay attention and get started on tasks. In addition, they also help students use information and experiences from the past to solve current problems. Simply put, this command center is in charge of making sure things get done - from the planning stages of any task to the final deadline. This is why executive functioning skills are crucial to classroom success.

THE IMPORTANCE OF EXPLICITLY TEACHING EXECUTIVE FUNCTIONING SKILLS

In the first part of this article series, we pointed out that, year after year, teams wrestle with improving executive functioning skills for struggling students. As teachers, we cannot simply provide strategies, accommodations or tools with the hope that our learners will develop executive function skills. Instead, we need to first teach our students how the brain learns, the role of executive function in this process and fundamental word knowledge of key executive functioning concepts.

It is impossible to overstate the importance of explicitly teaching executive functioning skills to learners of any ability within structure and routines.

As we shared previously, we have trained thousands of teachers to expand their depth of understanding of how executive function develops and the impact it has on learning by using consistent lessons, tools and strategies that keep students on task and increase such crucial skills. In addition, we stated that we have had significant success using the research-based methodology of T.H.E. P.A.C.T. framework to directly teach students of all abilities fundamental knowledge of executive functioning skills and increase their understanding of the tools we put into play to assist them in the classroom.

Students with executive functioning issues respond very well to increased structure, routine and predictability in their lives. This has been proven time and time again. This directly aligns with the

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PHYL MACOMBER, President of Make A Difference, Inc. Her research-based teaching strategies have been published in several articles featured in clinical publications in education since 2009 and are being successfully used across North America and in parts of Australia, South Africa and Italy. Phyl was featured in the Common Threads Trilogy book series in 2015 as one of the top 100 empowering women from around the globe and has been a guest on several radio shows to discuss simplifying instruction for students of all abilities. www.AboutTHEPACT.com

FIO QUINN has been working in the field of education since 1985 as a teacher, trainer, national presenter and developer of learning resources. Fio has an extensive background in special education, assistive technology and differentiated instruction. She maintains her educational ties across two continents – working across North America and Europe. Fio is an independent consultant; developer of instructional technology materials; and national trainer of educational software, access tools and apps. She has co-authored several collections of ready-to-use educational activities for different software and mobile technologies.

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foundational principles of T.H.E. P.A.C.T., which are consistency and predictability. This is one of the primary reasons why the methodology of T.H.E. P.A.C.T. is so effective as a teaching framework for learners of all abilities. When students know what to expect, it decreases cognitive load, increases their participation and improves their independence.

PART TWO: THE "CONNECT-THE-DOTS" METHODOLOGY OF T.H.E. P.A.C.T. FOR TEACHING EXECUTIVE FUNCTIONING

In Part Two of this article series on executive functioning, we will walk you through a chain of vocabulary building lessons - using both print-based and interactive tools - for students to learn about the concepts of organization, planning, prioritizing, initiating and monitoring tasks and time management related to daily classroom assignments and long-term projects. Language lessons will also include learning about important executive functioning tools. Creative and engaging vocabulary lessons will include language-based games, reference tools and hands-on projects.

In addition, we will connect these vocabulary lessons to "reading-to-learn" lessons for students to expand their knowledge base and read about these executive functioning skills and tools. Real-life student examples of lessons will be outlined using talking concept maps and interactive sequence lists and timelines, along with accessible books and study guides. You will learn the importance of creating a library of executive functioning resources to complement explicit in-person instruction as it relates to independent learning opportunities for review and practice.

CONTENT ORGANIZATION AND CURRICULUM PLANNING

Educators often struggle with how to organize the content they need to teach. Regardless of the level of organization a particular teacher embraces, preparing curriculum content needs to include time set aside for planning and have some type of system for prioritizing information.

You may be thinking, "Where would I possibly begin when preparing to teach executive functioning skills?" We would like to share with you examples of free tools that educators are using to organize, plan and prioritize their content. These are called T.H.E. P.A.C.T. Curriculum Planning Tools and they may be helpful to you when identifying key concepts, corresponding definitions, related concepts and more complex text for the students you serve.

The Learn About Module focuses on teaching a solid understanding of word meaning and word knowledge. T.H.E. P.A.C.T. Curriculum Planning Tools for the Learn About Module outline four essential components of teaching vocabulary:
- The vocabulary word or key concept
- The definition
- The vocabulary word or key concept in a sentence
- Concepts related to the vocabulary word or key concept

The Read About Module focuses on expanding an understanding of the vocabulary words or key concepts across main ideas, details and summary points. T.H.E. P.A.C.T. Curriculum Planning Tools for the Read About Module outline three key formats when providing "reading-to-learn" opportunities. These include accessing more complex content for each word or concept in the formats of:
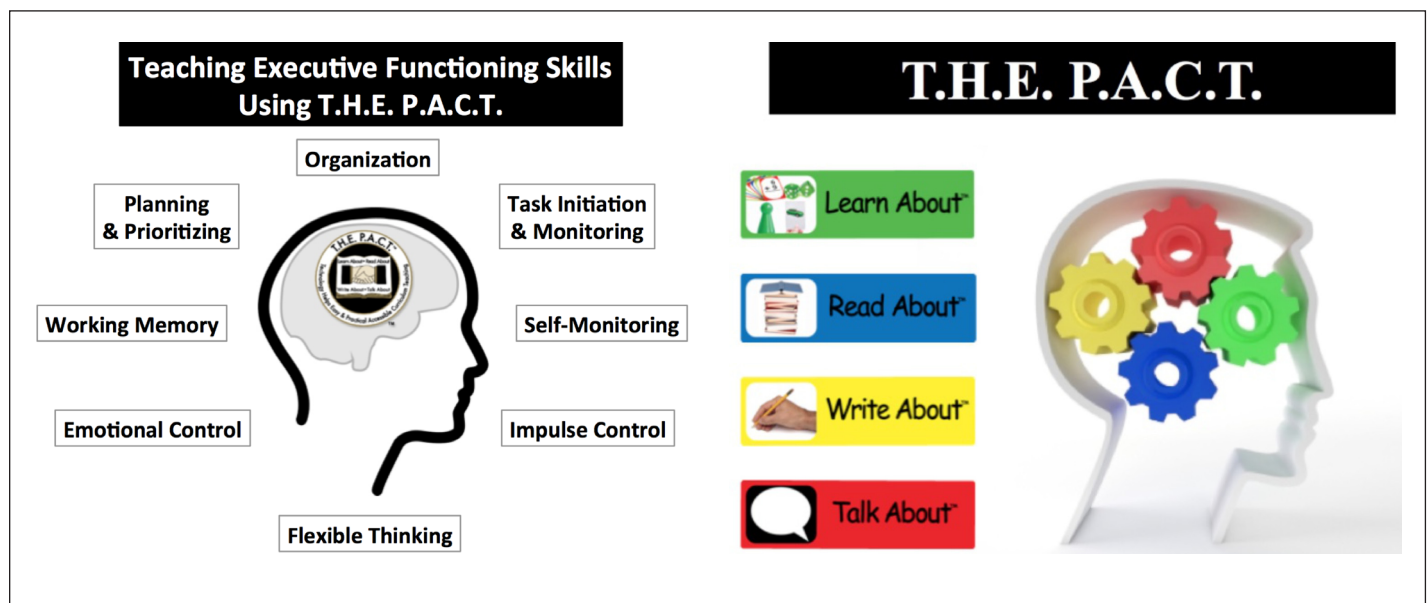- Detail bullet points
- Passages

Photo #1: "Knowing what to expect from activities helps children become more confident." Dr. Peter Gorski, Harvard Medical School

- Question-and-answer study guide sets

In trainings and consultations for T.H.E. P.A.C.T., educators are walked through a series of five basic steps for this process that we wish to share with you.

Once your topic of instruction is identified (in this article, the topic example is executive functioning), simply:

Step 1: Enter the vocabulary words and definitions on the Learn About forms.

Step 2: Enter a passage for each vocabulary word on the Read About forms.

Step 3: Identify three key bullet points in each passage and enter on the Read About forms.

Step 4: Develop each bullet point into a Q & A pair and enter on the Read About forms.

Step 5: Select related concepts and one key sentence in each passage for each vocabulary word and enter on the Learn About forms.

Organization, planning and prioritizing curriculum content are essential. We would like to donate these planning tools to you.

To receive a free copy of T.H.E. P.A.C.T. Curriculum Planning Forms for the Learn About and Read About Modules, please click on the following links:

The Learn About Module: http://aboutthepact.com/optin-thepact-curriculum-planning-tools-learn-about/

The Read About Module: http://aboutthepact.com/optin-thepact-curriculum-planning-tools-read-about/

BUILDING SOLID WORD KNOWLEDGE OF EXECUTIVE FUNCTIONING SKILLS

For our executive functioning topic, we are sharing a real-life example of a unit that was created for several groups of students with varying abilities. The vocabulary building lessons in the Learn About Module were explicitly taught in classrooms, learning centers, resource rooms and therapy settings. Both print-based and interactive tools were used

for students to learn about key executive functioning concepts related to daily classroom assignments and long-term projects.

Many of the vocabulary lessons for this executive functioning topic were previously used with the students in their academic, life skills and social communication classes, as well. The students were

T.H.E. P.A.C.T.™ Curriculum Planning Tools

Learn About

DIRECTIONS: Related to a topic of instruction: select vocabulary words; definitions for each vocabulary word; sentences using each vocabulary word in context; and related concepts each vocabulary word.

TOPIC OF INSTRUCTION: Executive Functioning Level 1

Vocabulary Word	Definition	Use in a Sentence	Related Concepts
EXAMPLE	EXAMPLE	EXAMPLE	EXAMPLE
thinking	Using your mind to produce thoughts	You can share what you are thinking in class.	Brain, mind, thoughts, opinion, facts, learn
executive functions	A set of brain-based skills that help you get things done	Executive functions help you with organization, planning, and prioritizing.	command center, organize, plan, remember, prioritize, pay attention, manage
brain	The control center for your body, which is located in your skull, and receives and sends messages to tell your body what to do	Your brain collects information, sorts it out, thinks, and remembers.	skull, think, move, solve problems, organize, plan, focus, messages
organization	Being able to bring order to information, such as key concepts or main ideas, or to your environment and keep track of things	It is important to have organization in your work area.	order, information, environment, keep track, efficient, systemizing, saves time, reduces stress
planning	Creating a roadmap to reach a goal or complete a task	It is important to select the key steps when planning your project.	roadmap, goal, task, strategies, projects, materials, steps, map, brainstorming

Photo #2 Sample Page of T.H.E. P.A.C.T. Curriculum Planning Tools for the Learn About Module

T.H.E. P.A.C.T.™ Curriculum Planning Tools

Read About

DIRECTIONS: Related to a topic of instruction: select passage(s) containing each vocabulary word; extract up to 3 detail bullet points for each passage; and list up to 3 study guide question & answer sets for each vocabulary word passage.

TOPIC OF INSTRUCTION: Executive Functioning Level 1

Passage	Detail Bullet Points
Organization is being able to bring order to information, such as key concepts or main ideas, or to your environment and keep track of things. Organization is important because it allows you to perform tasks more efficiently. It helps you find things faster and it permits groups to work together without wasting time. Organization is also important for systemizing information. Good organization saves you time and reduce stress. REMEMBER: It is important to have organization in your work area.	• is being able to bring order to information or to your environment and keep track of things • is important because it allows you to perform tasks more efficiently • saves you time and reduce stress

Study Guide Question	Study Guide Question	Study Guide Question
What is organization?	Why is organization important?	How can good organization help you?

Study Guide Answer	Study Guide Answer	Study Guide Answer
Organization is being able to bring order to information, such as key concepts or main ideas, or to your environment and keep track of things	Organization is important because it allows you to perform tasks more efficiently.	Good organization save you time and reduce stress.

Photo #3: Sample Page of T.H.E. P.A.C.T. Curriculum Planning Tools for the Read About Module

familiar with the lesson formats and knew what to expect. It offered them a known structure, consistent routine and the predictability that they needed for this new topic of instruction.

The following vocabulary words and key concepts were selected for this introductory level executive functioning topic:
- executive functioning
- brain
- organization
- planning
- prioritizing
- sequence
- project
- main idea
- details
- initiating tasks
- monitoring tasks
- monitoring your brain
- time management
- checklist
- timeline
- brain break

Using the content outlined on T.H.E. P.A.C.T. Curriculum Planning Tools for the Learn About Module for this unit of instruction, we created fun and engaging lessons for the staff members and students! The vocabulary building lessons included the following:

ACTIVITY: MAKE A LEARNING BOARD
- Tools: Green foam board, vocabulary pictures and word cards
- Mini Description: Students are given pictures of the vocabulary words and are taught the meaning of each word as they glue them onto to the Learn About Learning Board project. Once complete, the students identify and label each vocabulary picture with a word card.

ACTIVITY: BUILD A VIDEO PHOTO ALBUM WITH IMAGES
- Tool: Photo album templates in the iPACT App System
- Mini Description: For each vocabulary item in the app activity, students (1)

listen to the vocabulary word; (2) activate the blank image target to listen to the recorded fact and watch a full-screen video related to the vocabulary item; and then (3) add a picture to the album that match the word and video.

ACTIVITY: IDENTIFY WORDS IN A WORD SEARCH
- Tool: Word Game Wizard in Mind Express Software
- Mini Description: Students are (1) presented with a list of vocabulary words on the screen and (2) instructed to search for the vocabulary item in the word search grid, which can be presented at different levels and complexity. Once the item is located, students select the first and last letter of the word to mark it on the word search grid. The definition and related concepts are discussed and reviewed for each vocabulary word in the lesson.

ACTIVITY: CREATE A DICTIONARY AND GLOSSARY
- Tool: Dictionary and Glossary Templates in the iPACT App System
- Mini Description: For each vocabulary item in the app activities, students (1) activate the image target to listen to the recorded vocabulary word and/or watch a full-screen video related to the vocabulary item; (2) listen to the definition and/or word in a sentence; and then (3) enter the vocabulary word in the text box using the keyboard or speech-to-text. Once the dictionary or glossary is completed, the reference tool is reviewed - item by item - as the students use the annotation tools to highlight the vocabulary word and underline key details in the definition.

ACTIVITY: MAKE A COLLAGE BOARD
- Tool: Collage Templates in the iPACT App System
- Mini Description: Using their Learn About Learning Board project as a

Photo #4: Learn About Learning Board, Video Photo Album, Word Search, & Dictionary

reference, students select a certain number of vocabulary items to place on their collage in this app activity. Students (1) select a vocabulary image; (2) add text or a caption from their Learn About Dictionary or Glossary; and (3) add recordings to each vocabulary target on the collage. The option to record and add personalized videos is available.

ACTIVITY: PLAY CLUE WITH VOCABULARY BALLOON MAN

- Tool: Word Game Wizard in Mind Express Software
- Video Link: https://www.youtube.com/watch?v=fHoBAQEFpEA
- Mini Description: Students are presented with a clue – with or without a picture support - about each vocabulary word on the screen. Then, they are instructed to identify the vocabulary word, using the blank letter lines as a visual clue for the number of letters in the word, and select the letters using the onscreen keyboard to complete the word.

ACTIVITY: HIGHLIGHT WORDS AND IDENTIFY CONCEPTS IN VIDEOS

- Tool: Notecard Templates in the iPACT App System
- Video Link: https://www.youtube.com/watch?v=rWpWFgQ8SLo
- Mini Description: For each vocabulary item in the app activity, students (1) activate the text target to listen to the vocabulary word; (2) highlight the vocabulary word using the highlighter in the annotating toolbar; (3) activate the image target to listen to the recorded vocabulary word and watch a full-screen video related to the vocabulary item; and (4) circle, underline or mark key components of the video when the instructor pauses it. Then, students swipe to view and listen to the definition and related concepts for the vocabulary item.

ACTIVITY: MATCH VOCABULARY TO DEFINITIONS

- Tool: Matching Templates in Mind Express Software
- Mini Description: A list of words and definitions are presented on the screen and the students are instructed to drag or click to match the vocabulary words to the correct definitions.
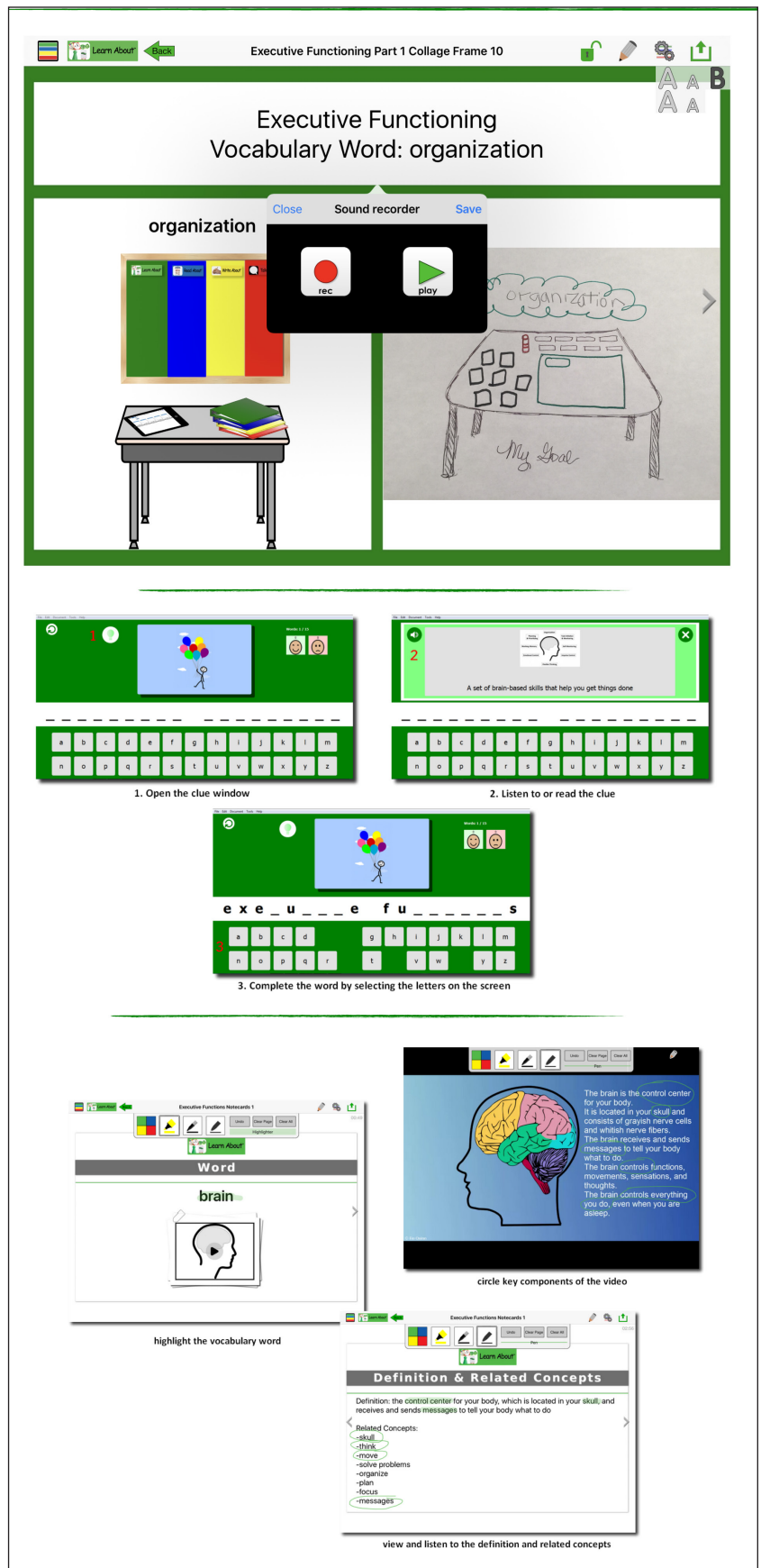
Photo #5: Learn About Collage, Balloon Man, & Video Notecards

ACTIVITY: PLAY VOCABULARY AND DEFINITION BINGO

- Tool: Bingo templates in the iPACT App System
- Mini Description: After given a vocabulary word, related concept or definition, students mark their interactive Bingo board in the app activities to identify the vocabulary concepts.

ACTIVITY: SPIN VOCABULARY OR CLUES AND PLAY A BOARD GAME

- Tools: Spinner templates in the iPACT App System and green foam board game with plastic pouches

- Mini Description: In a turn-taking format, students (1) spin and listen to vocabulary, definitions or context clues using the app activity; (2) find and locate the item on the Learn About Game Board; and (3) move their game piece to the correct location.

It is important to note that not all of these instructional technology activities were created from scratch. For example, in the iPACT App System, the "cloning" and "converting" features of the app were used to generate activity after activity in less than a minute. In the Mind Express software, the new software "wizards"

cut content creation time by 75%. The teachers reported that their materials prep time significantly reduced and that students of all abilities were highly engaged in these vocabulary-building lessons.

EXPANDING AN UNDERSTANDING OF EXECUTIVE FUNCTIONING SKILLS

The Read About Module lessons expand vocabulary knowledge to more complex text and "dive-in deeper" lessons. In a "connect-the-dots" format, students methodically go through
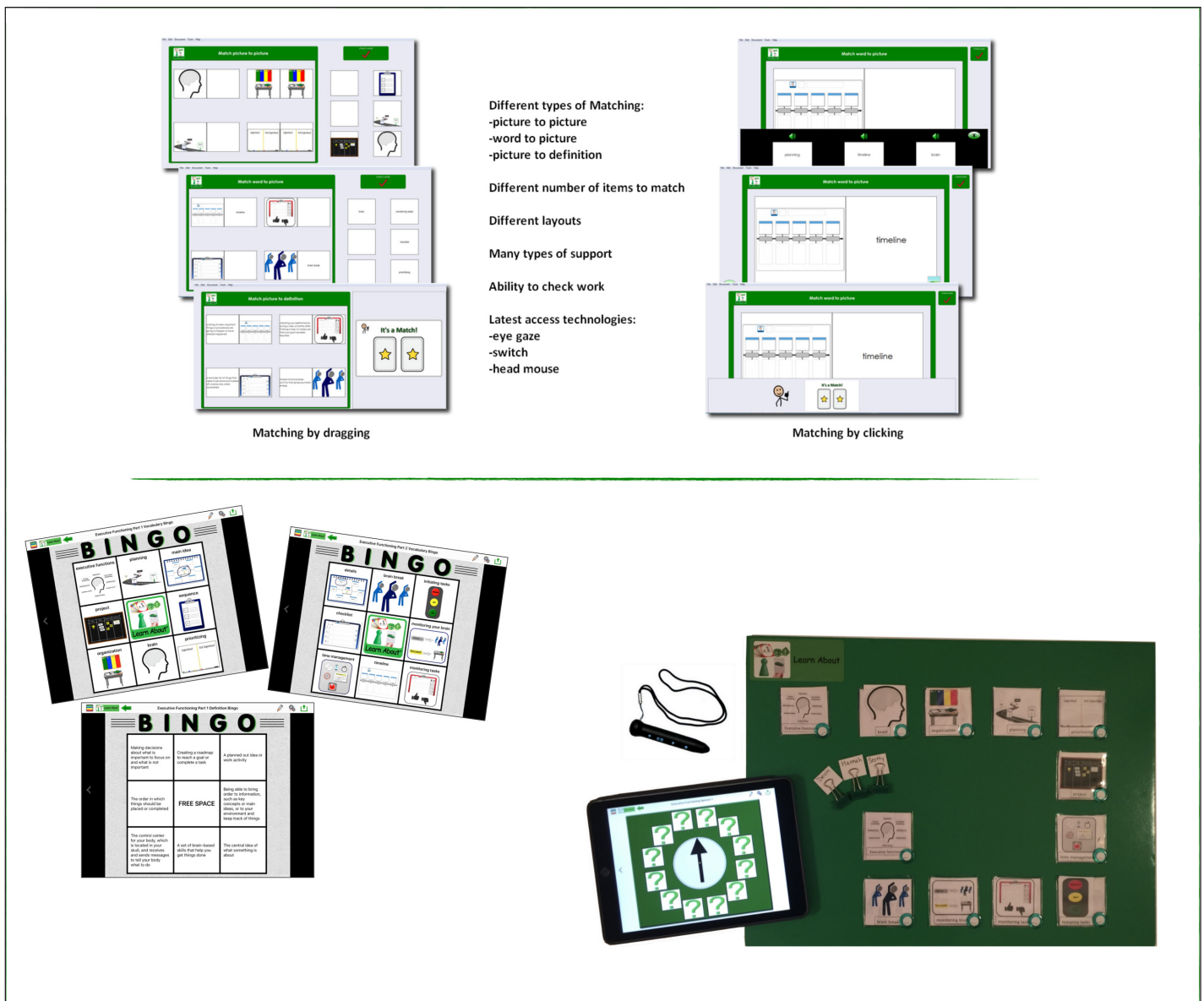

Photo #6 Learn About Matching, Vocabulary & Definition Bingo, & Board Game with Spinner

literacy-based lessons and access informational text to further develop their fundamental knowledge of executive functioning.

Many of the literacy-based lessons for this executive functioning topic were previously used with the students in their academic, life skills and social communication classes, as we mentioned related to the previous module. As stated, the students were familiar with the lessons and knew what to expect.

Using the content outlined on T.H.E. P.A.C.T. Curriculum Planning Tools for the Read About Module for this unit of instruction, a variety of skill-building lessons were developed. The Read About lessons included the following:

ACTIVITY: LISTEN TO VOCABULARY CONCEPT MAPS

- Tools: Concept Map Templates in Mind Express Software and the iPACT App System
- Video Link: https://www.youtube.com/watch?v=UfkmXYdp820
- Mini Description: In these app activities, students activate each vocabulary map target to read about key details for each Learn About vocabulary item. In addition, many of the vocabulary items are then expanded into their own unique maps. All details are presented in a bullet point format to make the most important information salient to the students.

ACTIVITY: REVIEW A STUDY GUIDE

- Tools: Study Guide Spinner templates in the iPACT App System
- Mini Description: In a game-based format, students activate the Study Guide Spinner to listen to question-and-answer pairs. This can be used as a stand-alone instructional lesson or this app activity can be paired with additional literacy-based tools.

ACTIVITY: LISTEN TO A BOOK WITH EMBEDDED STUDY GUIDES

- Tools: Book with Study Guides templates in the iPACT App System
- Video Link: https://www.youtube.com/watch?v=MOhzbVrkRtM
- Mini Description: In these app activities, students expand their knowledge and read about their vocabulary words in more complex text. Within the body of the text, students use the annotating tools to highlight, underline and/or circle important information. Comprehension checks – in the form of Question and Answer Sets – are embedded within the books at varying levels to review information in bite-size chunks. Students listen to the question and corresponding answer to help make the content "stick." In many cases, an instructional video is launched to further build comprehension of the content. When watching a corresponding video, the instructor pauses the video at key points and uses the annotating tools to point out important details. Students also have the opportunity to annotate on the videos to deepen their understanding.

ACTIVITY: REVIEW A QUICK START GUIDE

- Tool: Beginning, middle and end template in Mind Express Software
- Mini Description: For a quick start guide, students activate or reference the beginning step, middle step and ending step of what needs to be completed to learn a project strategy.

ACTIVITY: PREVIEW A SEQUENCE LIST

- Tools: Sequence list templates in the iPACT App System
- Mini Description: In these app activities, students read about the order and/or sequence of things to further expand their comprehension. Examples of sequence lists include information related to events or projects, "How-To" guides, summary points or procedures. Instructional videos are launched to further build comprehen-
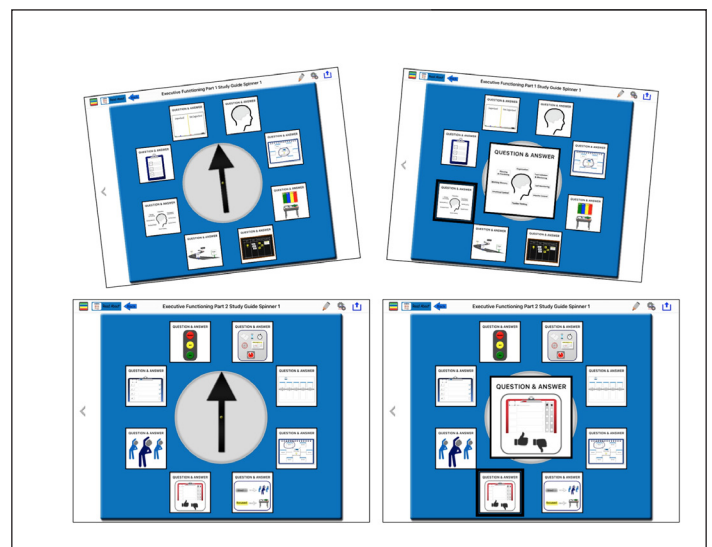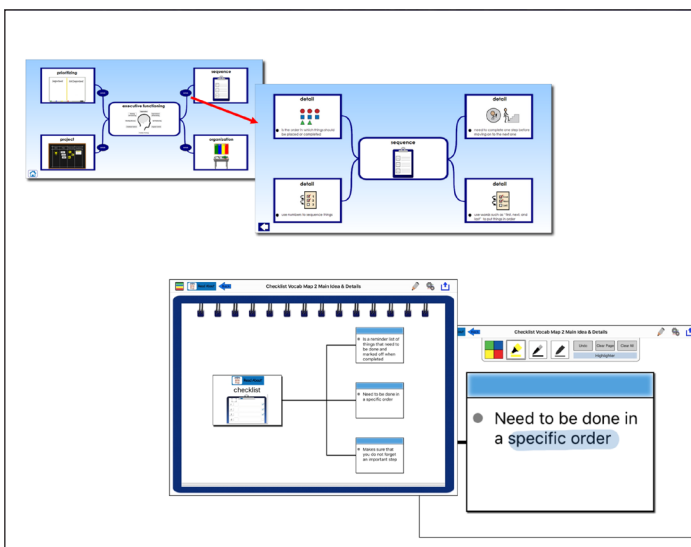

Photo #7 Read About Concept Maps & Study Guide

sion of the sequence. The instructor pauses the video at key points and uses the annotating tools to point out important details. Students also have the opportunity to annotate on the videos to deepen their understanding.
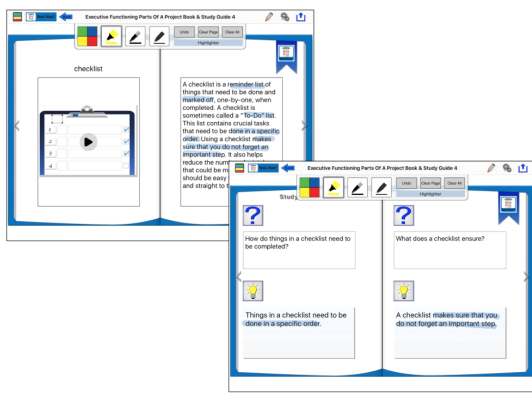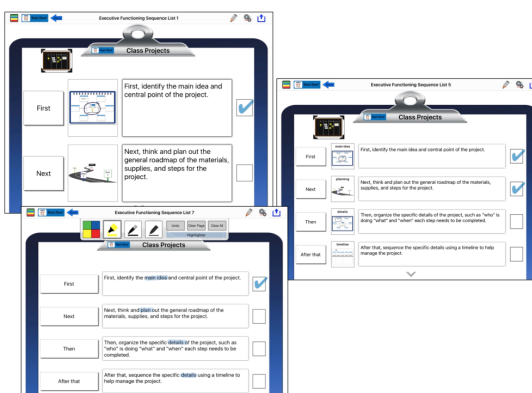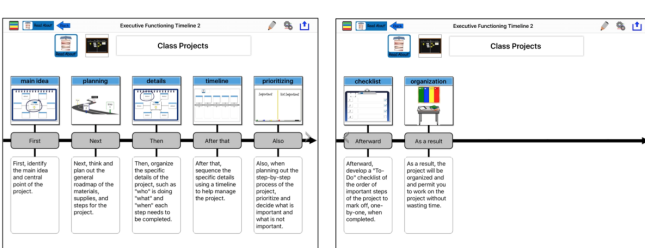
ACTIVITY: PREVIEW A TIMELINE

• Tools: Timeline templates in the iPACT App System
• Mini Description: In these app activities, students read about the order and/or sequence of things to further expand their comprehension. Examples of sequence lists include information related to events or projects, "How-To" guides, summary points or procedures. Students read about time-based information, transition words, cohesive ties and force-ordered tasks. Instructional videos are launched to

further build comprehension of the timeline. The instructor pauses the video at key points and uses the annotating tools to point out important details. Students also have the opportunity to annotate on the videos to deepen their understanding.
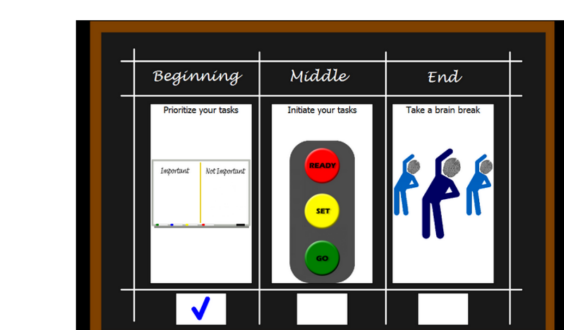
As previously stated, it is important to note that not all of these instructional technology activities were created from scratch. For example, in the iPACT App System, the "cloning" and "converting" features of the app were used to generate activity after activity in less than a minute. In the Mind Express software, the new software "wizards" cut content creation time by 75%.

The teachers reported that these Read About lessons provided the incremental comprehension building that these

students needed to further expand their knowledge base of executive functioning skills.

STRUCTURE, ROUTINE, PREDICTABILITY AND KNOWLEDGE THE RESULT OF USING T.H.E. P.A.C.T.

In order for students to be successful in the classroom and effectively use the tools we make available to them, they need to have fundamental word knowledge and word meaning of key executive functioning concepts and tools we give them to help them in the classroom. In addition, it is critical for students to expand their word knowledge in more complex text – using a step-by-step lesson system – to truly deepen their understanding of executive functioning.
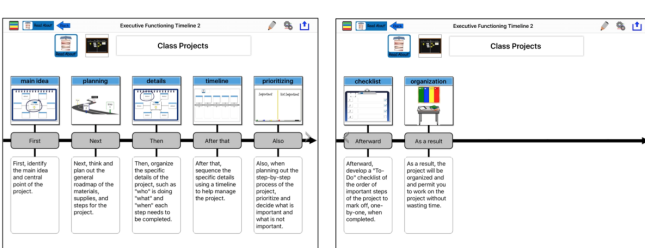

Photo #8 Read About Book & Study Guide, Quick start Guide, Sequence List, & Timeline

Students are able to better plan, organize, remember things, prioritize, pay attention and get started on tasks if explicitly taught how to do so. They will be more successful using the tools we give them if they have a true understanding of what they are, why they are important and how to use them. When increasing their fundamental knowledge of executive functioning skills, students are better prepared to use information, their experiences and the tools we provide them to be more independent in the classroom. As we previously stated, it is impossible to overstate the importance of explicitly teaching executive functioning skills to learners of any ability.

Students with executive functioning issues respond very well to increased structure, routine and predictability in their lives. It is a proven fact. This directly aligns with the foundational principles of T.H.E. P.A.C.T. - consistency and predictability - and why the methodology of T.H.E. P.A.C.T. is so effective as a teaching framework for learners of all abilities, including those with executive functioning issues.

As David Baker, Superintendent of the Windsor Southeast Supervisory Union, states, "T.H.E. P.A.C.T. is simply purposeful teaching. It is the instructional practice that is vital to student success."

RESOURCE INFORMATION:

iPACT App System. Apple App Store. For more information, please go to: www.THEiPACT.com.

Mind Express Software. Jabbla. For more information, please go to: www.jabbla.com.

The Research-Based Teaching Methodology of T.H.E. P.A.C.T. Make A Difference, Inc. For more information, please go to: www.aboutTHEPACT.com.

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