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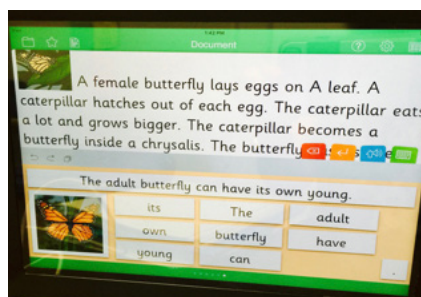ATClosingTheGap

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Beyond Theory and Into Practice: Successfully Implementing Core Vocabulary to Create Functional and Purposeful Language in the Pediatric Population

SUMMARY:

Clinicians and parents are given strategies for how to grow communication using core language with augmentative-alternative communication (AAC). Based on developmental principles and child-led interests, the author focuses on how to create communication buy-in so children are naturally motivated to use their AAC device. This includes the process of creating opportunities for engagement, modeling language using aided language stimulation, expanding communication into turn taking and eventually developing readiness for structured, but functional, therapeutic techniques.

WELCOME TO CORE!

If you are involved in the augmentative-alternative communication (AAC) world, chances are you have attended a training or informal presentation in recent years on the philosophy of core language. Core language refers to the words that are most frequently occurring among standard language users; and it has become the framework for language in AAC devices. Researchers looked at verbal language usage over the lifespan to find the most frequently occurring words in communication. These frequently used words are referred to as "core" and they make up 80% of the words we use day-to-day across various settings. Core language is what we all use to create novel language, regardless of the communicative context; words such as "want, like, help, need, don't, go, mine, you, that, eat, more and stop."

Although linguists have researched, developed and implemented core language for the last 50-60 years, only recently has it become mainstream in AAC language systems. After decades of well intentioned, but inefficient and ineffective categorical, noun-based language systems, the assistive technology industry has moved forward with core language as the foundation for AAC. We now see core language everywhere. Not only have the

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Carrie currently works in collaboration with Bradley University to conduct research on the efficacy of enhanced milieu teaching within a parent-child dyad in peer-based language intervention groups. She is the recipient of the Outstanding Professional Award from the Peoria Regional Chapter of the Autism Society of America, is a 25 Women in Leadership Recipient, and is a LAMP Certified Professional. Carrie has presented at international, national, and state level conferences as an expert in language development and disorders.

industry leaders rolled out core on their software for dedicated speech generating devices, but even app developers have integrated core language into their tablet platforms. While plenty of discrepancies still exist in the quality of programs (some were researched for decades, others thrown together in a marketing effort to sell apps), the good news is that we are providing non-verbal communicators with research-based, novel language opportunities based on typical communicators. Furthermore, because the philosophy of the approach is to use words that are common across a variety of contexts and situations, very little programming is required of the therapists and caretakers. That is progress!

Now that we have collectively agreed upon, as a profession and as an industry, what proves to be a valid and effective approach to communication, how do we actually help our clients and loved-ones be successful communicators while using core language?

Before we jump into any type of therapy, bring out a table and chairs, flash cards or penny boards, we must spend a considerable amount of time creating Communication Buy-In.

COMMUNICATION BUY-IN

The first task as clinicians is to teach our client that their device is their "lifeline," "phone-a-friend," and "get out of jail free" card." It's their **voice**. I would object pretty strongly if someone took my voice away. If I've done my job correctly, my client would likewise object strongly if I took away his/her communication system. My client must **want** to use their communication device.

Aside from being an AAC specialist, I am an early intervention provider. When I begin working with toddlers, I start by establishing a rapport. They need to like me. They need to be waiting at the window watching for me to arrive at their house. The must be eager to run and tell me what they have been waiting all week to share. The same is true for my AAC users. Growth will not happen if my client

is not motivated to communicate. This starts with engagement.

STEP 1: ENGAGEMENT

Engagement is the pillar of successful communication, regardless of the age, communication level or diagnosis. It's my job to find something my client likes and they're willing to let me be a part of. Trust me, I know, this can be very, very hard, especially with some of our clients who, by design, are perfectly content playing alone. To teach anything, my client must be willing to look at what I'm doing or listen to what I'm modeling. They will not do this if we are not engaged and my efforts will be fruitless.

If you listen to a parent play with their child, you will likely hear something like this: "What color is that? What's this called? Throw the ball in the basket!" For some reason, adults tend to unintentionally place demands on kids while playing. However, if you listen to preschool children playing together you're likely to hear things more along the lines of "I made a red tower. Your track is short. I made a basket!" The children are just playing and engaging with one another. They are not placing demands on each other.

Your job, at this time, is to simply prove

to your client that you are interested in doing what they want to do. Play and engage. Do this without asking questions and without giving directions. Set a timer for 15 minutes and simply play with your client. Play whatever it is your client likes to play. That may be blowing bubbles, spinning a top, going up and down stairs, playing with water or watching beans repeatedly drop from eye level to the table. As you do this, do not, I repeat, do not ask your client any questions! And do not tell them what to do! **Don't ask questions or give directions.**

STEP 2: MODELING

Clinicians know that modeling language is a cornerstone of language therapy. We use child-directed play to set up opportunities for modeling targeted language. The same strategy is important when developing language in an AAC user. The difference here is that we must model language using the child's own language system; i.e., their speech generating device or AAC system. As you join the child in play, you may talk to them using aided language stimulation on either their device or a side-by-side device.

Aided language stimulation (ALS) is "a communication strategy, where

a communication partner teaches symbol meaning and models **language** by combining his or her own verbal **input** with selection of vocabulary on the Augmentative and Alternative Communication (AAC) system. This is done by simultaneously selecting vocabulary on the AAC system and speaking." (source: www.aacinstitute.org)

ALS is the most important step any of us can take in teaching AAC communication to our clients or loved-ones. Babies are immersed in language for a full year before saying their first words. Children are continuously exposed to the language they are learning through the intuitive modeling provided by their caregivers. Significant research has been conducted on just how important language exposure and modeling is for vocabulary development, and that the level of exposure is directly related to not only school success, but IQ. One popular study on this topic is referred to as The 30 Million Word Gap.

*"The research of Hart & Risley Study found that "the more parents talked to their children, the faster the children's vocabularies were growing and the higher the children's IQ test scores at age three and later." A child with "talkative" parents heard 45 million words spoken to them during their first four years, while a child with "taciturn" parents heard 13 million words, resulting in a cumulative **30 million word gap** after four years."*

(Source: Intelligent Interaction by BabyiSpeech.com)

When I look at the data tracking from my client's AAC devices, I often see between 50-250 words used on the device a day. This includes words modeled by their family members, therapists and teachers. Assuming the best-case scenario, the child is exposed to 365,000 words in four years. Compare that to the 45 million words a verbal child is exposed to by talkative parents. Even if we compare that data to the 13 million words heard by "taciturn" parents, we remain at a 12.6 million-word gap! If we modeled 250 words a day on a child's AAC device, it would take

us 142 years to get to the amount of language kids on the low end of the curve are verbally exposed to in their first four years of life.

We must model more language on the child's AAC system. As you are engaged with the child in their activity of choice, use aided language stimulation to match his/her play. Again, refrain from questions and directions. Using aided language stimulation, talk to the child, taking your cues from preschool peers. "I like that. It's tall. Wow! That's sticky. Yuk! I don't like that! Here come some more. It's big! That one is mine. I'm all done." We need to be prepared to extensively model language on the device before expecting the young AAC user to utter his first independent word. That is the realistic progression of language development.

PARENT INVOLVEMENT AND FAMILIARITY WITH DEVICE

At this point, when we are trying to match modeling language on the device with our own verbal language model, we realize just how critical it is to be fluent in the child's AAC system. Do we know the child's system? Can we quickly find and model the target language we expect the child to be using? Can the parent? The best indicator of a child becoming a successful AAC communicator is parent involvement.

It's hard to learn something new, but if we want our children and clients to succeed, we must learn alongside them and be a strong model in showing them where we are going next. It's true for anything we are trying to teach. When my oldest daughter was in preschool, she decided she wanted to learn how to play the violin. I did not play the violin and my musical training was limited to three years of public school flute lessons. Although my four-year-old was certain she could flawlessly pick up the violin and play on her first attempt, I knew that to succeed, this was something I would have to learn as well. We rented our first violins, hers being a scaled-down 1/32nd sized instrument, and together we learned. Every sin-

gle song, practice and lesson was played together. An instructor taught and guided us each week. My daughter's ability to learn violin relied on my ability to model it for her and her ability to grow and be ready for her next lesson depended on us practicing every single day. Practice did not just consist of setting a timer and drilling the melody, though there was plenty of that. It was fun, creative and engaging. Sometimes we played standing on the bed, or hiding under the table. We played hide and seek using melodies from the songs. We played tag using musical notes. We used counters and made paper chains and made up stories. The recordings of the songs we were learning played over the car stereo every time we got in the car. Eventually she surpassed my abilities and I was no longer able to keep up with her rate of learning. I still sat in on every single lesson for the next 14 years, taking notes and being a background coach. As she got older, she practiced while I made dinner and, although I could no longer play at her level, I knew the target and was able to shout at her to use a "low 2" on that note. She is now in college with her own full-sized violin. Had I given my daughter that violin at the age four, with one lesson once a week and no modeling; we would have failed to make her a musician.

This summer I ran an AAC group program that included parents and siblings. It was a six-week program and my intention was to teach a new strategy for growing language each week. Most of
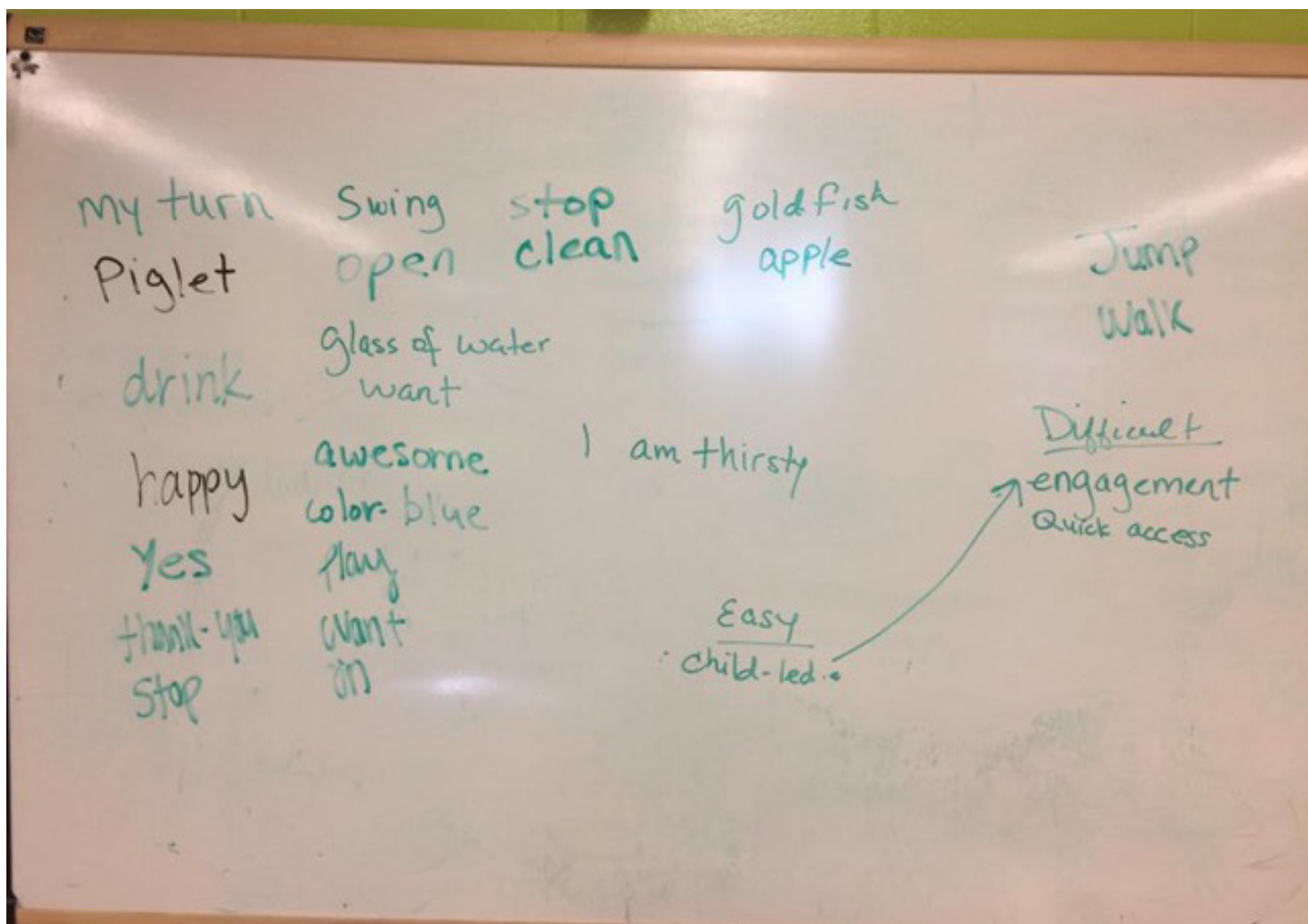
the families in my group were also my clients, so I expected that device familiarity was a given. However, I quickly learned that the parents were reluctant to use the device. We used songs, child-led play, the outdoors, snacks and books to practice using the device across various activities. Interestingly enough, it was the siblings who were most eager to provide aided language stimulation. The parents often lacked confidence and familiarity with the device. I heard comments such as "he knows the device better than I do" or "her dad is more familiar with the device than I am." As the weeks progressed, we stayed at steps 1 and 2 in the program: Engagement and Modeling Language. We were not able to progress to further strategies without having first mastered these steps. Parent modeling on the device is critical to the success of any future development.

STEP 3: TURN-TAKING

Assuming the clinician and the family have dedicated themselves to learning the AAC system; assuming there is engagement and modeling without asking questions and without giving directions, the next step is to take turns in communication.

So often I see parents take multiple turns without waiting to see if the child is still engaged. It seems they are so anxious to offer more input, to keep the interaction going, that it ends up becoming bombarding, and then engagement is lost. Clinicians can help coach the parents on what successful turn taking looks like and how to wait for signs from the child that they are still engaged.

For example, take a child who loves to throw plastic rings and watch them roll across the room. If I join him in the activity of rolling plastic rings, he believes that

I am fun and non-threatening. This is my engagement and I can simply join him in a parallel play experience. While staying by his side, if I use my AAC system to model "go" everytime I roll a ring, I am using this opportunity to teach developmental core language. Pretty soon, we may start rolling the rings back and forth to each other. He rolls them to me, and then I roll them back to him. The turn taking does not have to be a turn with language or even AAC, it can simply be a turn in play. It can be a look, a smile, a reach, a gesture or a vocalization. The trick is this: once I take a turn, I am not allowed to take another turn until the child has responded with interest to continue the exchange. Over time and with enough modeling, the child will seek the device to take his next turn because the activity is child-led and motivating. He has buy-in. For instance, I may move to the other side of the room,

leaving the device halfway between me and the child. Assuming it is my turn to throw the ring, the child will be motivated enough to approach the device, hit "go" and squeal in excitement as the ring comes back to him for his turn.

STEP 4: MOVING TO STRUCTURED THERAPY

It is only when we have communication buy-in that we can move to structured therapy. Without that, the device becomes work and we risk device abandonment. Therapeutically, growing language using core with AAC is going to be largely based on the developmental level of the child. I tend to follow typical language development as my guide for AAC language therapy. As such, I do a general language assessment, often using a combination of the Rossetti Infant Toddler Language Scale, The Functional Communication Profile, the AAC Language Genie and a language sample. This helps me to determine my baseline for language therapy. From there we make goals and grow language based on the needs and concerns that are important to the family.

My original assessment will help me know if I should target single words, two word phrases, plurals, questions, present progressive, etc. It will also help me focus on what type of pragmatic language I want to target. My client may be an expert at telling me "I want crackers," but have difficulty telling me to "stop, go away" or "play something different." There does come a time when I need to teach the child using a structured, sit down, more traditional therapy approach. When we are ready for this, I start with repetitive play or books at the table, and then follow up with the same targeted vocabulary in a child-led activity. This allows the child to learn through many structured exposures and then, once the target has been practiced multiple times, it can be carried over to different activities. Because the focus is core language, it should be easy to find a variety of settings in which to practice the targeted words.

For example, I have a set of beginning sight-reader books that consists mostly of core language. They are highly repetitive and perfect for matching developmental verbal language in therapy tasks. Depending on the level and attention of the child, you can either read the story with aided language stimulation, or you can ask the child to take turns reading the story with you. Recently my client and I read a book where the target words were "play" and "with." I read the book to him the first time through using aided language stimulation. He read it to me the second time through with his dedicated speech-generating device. The text was predictable, repetitive and used picture cues to ensure success with unfamiliar words. We sat at the table reading "I play with blocks. I play with boats. I play with dolls." and so on. When the reading was done, we went outside to play, incorporating the same target language into our activities." This time the phrases were novel and relevant to our own play. "I play with rocks. I play with sand. I play with music. I play with water."

Regardless of the structured therapeutic activity, the end goal is for the child to communicate functionally and independently.

BE NATURAL AND BE CREATIVE

Good therapy doesn't necessarily look like therapy. Allow yourself the freedom to be creative and truly understand the communication needs and desires of your client. Understand what is important to the family. Take time to understand what is interesting to the child so they are motivated to communicate purposefully and functionally. Make use of your lending libraries or contact your local device representatives to borrow a device; and then use it, yourself, purposefully and functionally. (This can be fun to practice at home with your own family members.) Go to new settings with your client and talk to new people. Go outside and play alongside other kids. Ask a peer or sibling to join your session. Be fluent on the devices that your clients use and encourage parents to be the at-home experts with respect to their child's AAC system! Before long, you will see how core language results in novel communication that allows each person to shine as a truly unique individual. ■

Autism and Communicative Competence: Effective Strategies and Solutions

INTRODUCTION

During my 25 year career serving students with Autism Spectrum Disorders (ASD), I've become increasingly concerned about the augmentative-alternative communication (AAC) strategies (or lack thereof) being implemented for this population and find myself asking: "Why have we made such little progress in developing functional communication skills for students with ASD?" The answer is likely two-fold:

• A lack of understanding about how students with ASD learn and communicate.

• A "one-size fits all" approach to AAC implementation, without considering the unique needs of the individual student.

Working as a SLP and AAC specialist I've seen countless communication interventions for autism come and go over the years. Most of these are behavioristic approaches designed to increase verbal speech utilizing Applied Behavioral Analysis (ABA) techniques. ABA is based on the principles of Verbal Behavior, first published by B.F. Skinner in 1957. Dr. Skinner was a Psychologist and Behaviorist who viewed verbal speech as a behavior that could be shaped through the process of operant conditioning. Noam Chomsky, a Linguist and Philosopher who in the 1960's developed the theory of Universal Grammar, with which SLPs are intimately familiar, adamantly opposed this theory. According to Chomsky, the acquisition of language is innate and distinctly separate from other aspects of human cognition. In other words, humans have a predisposition to learn and use language.

Considering both theories while also relying on my professional training, experience and observations, I have developed my own viewpoints regarding language development for students with autism. While serving as a diagnostician and trainer for the California Department of Education, I travelled throughout Northern California collaborating with Individual Education Plan (IEP) teams and working directly with students and teachers in programs for students with ASD. After visiting hundreds of classrooms, I have become increasingly aware that communication interventions for students with ASD continue to be based largely on the principles of Verbal Behavior. I have also discovered that these interventions are not highly effective in developing functional communication skills.

UNDERSTANDING AUTISM

Students with ASD are typically visual thinkers who have difficulty processing verbal information. They also have difficulty expressing themselves using verbal speech. Many never become functional verbal communicators, although they often learn to repeat rote phrases and scripts. The writings of Temple Grandin have helped me understand and explain how individuals with autism think and learn. Dr. Grandin, who has published nu-

BETSY CAPORALE, Betsy has been working in the field of AAC/AT for over 25 years. In 2006 she earned her Competency Certificate in Communication Assistive Technology Applications from The National Association of State Directors of Special Education and was awarded an Assistive Technology Specialty Certificate in Communication Services from the University of South Florida. She has presented nationally and internationally on topics related to Autism and Complex Communication Needs.

While working for the California Department of Education, Northern California Diagnostic Center she developed and taught an AAC Assessment and Services Certification Course, certifying over 200 speech-language pathologists serving students in educational settings. Betsy is the owner of Augmentative Communication Solutions, a private practice supporting students and school districts in California.

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merous books and articles on the subject, has herself been diagnosed with autism. In her book *Thinking in Pictures: My Life with Autism*, Dr. Grandin states: "One of the most profound mysteries of autism has been the remarkable ability of most autistic people to excel at visual spatial skills while performing so poorly at verbal skills. When I was a child and a teenager, I thought everybody thought in pictures. I had no idea that my thought processes were different." She goes on to explain; "Words are like a second language to me. I translate both spoken and written words into full-color movies, complete with sound, which run like a VCR tape in my head. When somebody speaks to me, his words are instantly translated into pictures. Language-based thinkers often find this phenomenon difficult to understand." We also know that students with ASD demonstrate significant social communication deficits. When speaking about her own social skills, Dr. Grandin shares: "Social relationships have been learned solely by intellect and use of my visualization skills. All my thoughts are in pictures, like videotapes in my imagination. When I encounter a new social situation I can scan my data banks for a similar situation that I can use as a model to guide me in the new situation."

(www.iidc.indiana.edu/pages/Social-Problems-Understanding-Emotions-and-Developing-Talents)

THE THREE R'S: REQUESTING, REFUSING AND REPEATING

Picture communication strategies, such as the Picture Exchange Communication System (PECS), are commonly adopted as communication tools for students with ASD. They are initially used to teach requesting, but AAC intervention often stops there. Many students with ASD have not learned how to communicate for purposes other than requesting, refusing or repeating highly scripted expressions that they have been programmed to use in specific settings. In order to become active participants in educational and social environments, students with ASD must learn how to make choices, comment, share information and ask questions using a variety of AAC tools and strategies. Without appropriate AAC supports, these students become dependent on adults to facilitate interactions with others, access the curriculum and participate in daily living activities. They also learn to rely on unconventional means of communication that may become habitual, such as eloping, acting out physically or engaging in self-injurious behaviors. Others may react by "shutting down" or becoming reclusive. The unfortunate result is that far too often, students with ASD have not learned to become effective communicators by the time they transition out of high school.

BEHAVIOR AND COMMUNICATION

Autism is characterized by significant deficits in receptive and expressive language, however; interventions implemented for this population tend to focus primarily on behavior, not communication. These students often have detailed behavior intervention plans (BIPs) which aim to understand why maladaptive behaviors occur, and then attempt to teach alternative behaviors which are more appropriate. The alternative behaviors may include the use of AAC, but when AAC is recommended as part of a BIP, a behavior specialist rather than a SLP oversees the selection and implementation of AAC tools and strategies. As a consequence, AAC recommendations are made without first evaluating receptive and expressive language, social communication skills or cognition.

It's important to understand that behavior and communication are interrelated, and realize that maladaptive behavior can be a very powerful and effective way to communicate. When analyzing an undesirable behavior, it's always important to consider what the student might be trying to communicate. Messages frequently expressed through behavior include:

- "This is too hard."
- "I don't understand what to do."
- "I don't want to do this."
- "I want to do something else."
- "I want to do it by myself."

Once we recognize that undesirable behaviors are a form of communication, we can work to shape those behaviors into more desirable modes of communication by providing the student with appropriate AAC tools and strategies. When implemented properly, these strategies can help enhance communication, reduce maladaptive behaviors and increase independence.

CONDUCTING A COLLABORATIVE AAC ASSESSMENT

Attempts to change unwanted behaviors cannot be made until there is a clear understanding of the student's strengths and challenges. This requires a collaborative assessment to determine current skills levels so that communication and learning interventions can be matched to the student's ability levels. It's just as important to ascertain personal likes and dislikes, as well as preferred interests. Once the assessment is completed, the IEP team, in collaboration with the SLP, can implement effective communication strategies across environments. SLPs are experts in the field of communication and should always play a lead role in the AAC assessment and implementation process.

EVIDENCE-BASED PRACTICES

Professionals who serve students with ASD should become very familiar with the 27 Evidence Based Practices for Autism identified by The National Professional Development Center on Autism Spectrum Disorders (NPDC). The efficacy of these practices was established through an examination of peer-reviewed research in scientific journals using rigorous criteria. Being familiar with these practices isn't enough though. Just because a treatment or practice is supported by research does not mean that it will be appropriate for all students with ASD. Implementing evidence-based practice calls for the consideration of three factors, all

of equal importance:

- Relevant, supportive research
- Individual needs and preferences of client/student
- Professional judgment.

Always keep in mind; there is no such thing as a "one-size fits all" approach when it comes to serving students with autism. Avoid falling into the trap of using materials, devices or teaching tools just because they have been purchased for or "approved" by your district. Do your research, get to know your students and trust your instincts!

EFFECTIVE AAC STRATEGIES AND SOLUTIONS

We often make assumptions about a student's skills and preferences without ever conducting a close inspection. For instance, we may implement PECS assuming the student understands abstract picture symbols, or use a dynamic screen speech-generating device assuming the student understands categories. Or, we might provide only a simple picture based system without realizing that the student can decode words and sequence them to create sentences. We also tend to make choices about AAC without considering the student's personal likes and dislikes. The sounds and voices of a speech-generating device, or the sound and touch of Velcro bother many students with autism. An effective AAC system is comprised of tools and strategies that are efficient, functional, and preferred by the user.

As Dr. Grandin points out, the spoken word is like a "foreign language" for individuals with autism. They are much better at processing information visually, often translating thoughts into pictures and movies. It should be no surprise then, that communication and learning strategies which incorporate the use of visuals are highly effective for this population. I have discovered seven fundamental AAC interventions that, when implemented correctly, can provide a framework to enhance communication, provide meaningful instruction and increase independence for students with au-

tism. Below is a description of these interventions followed by implementation suggestions covering a range of ability levels.

VISUALS SCHEDULES

Visual schedules are life-long supports that will likely be the key to independence for students with autism. They help students understand what is expected of them, when they are supposed to do something, where they should go and how they should act or behave. These systems are comprised of symbols, including objects, pictures, photos and text, that allow students to process information visually rather than relying solely on verbal input. They help to establish a sense of self-assurance and confidence, while relieving stress and anxiety. Feelings of pride and accomplishment are also realized when students are able to complete tasks on their own.

- *Suggestions:*

- Early learners will require a very concrete schedule and a high level of adult support. You may have to start by presenting the student with an actual object that clearly represents an activity or event (e.g., tambourine for music, ball for recess, lunch box for snack). Encourage the student to carry a concrete symbol as he or she transitions to each activity of the day.
- For students who understand symbols, start with a first/then schedule to alert the student about what is happening now and what will occur next. Use objects or photos/pictures that are clearly understood. Increase the number of activities on the schedule as appropriate.
- Students who have learned to read can use a text-based schedule. Ideally, they can eventually learn to create their own schedule.
- Provide embedded or "task" schedules to help student's complete assignments or classroom jobs independently.
- Schedules can be created with paper, pencil, markers and white board or on

Visual Schedules are life-long supports for students with ASD

a tablet computer.

CHOICE-MAKING

This is an antecedent-based intervention whereby the student is offered choices regarding materials, educational activities or scheduling of events. Choice making provides a means to communicate preferences and experience a sense of control and should be used across all activities of the day, as well as within activities. Choices can be made by looking, reaching, pointing, or verbalizing. Some students will need to be taught choice making.

- *Suggestions:*

- Teach choice making by offering two objects (food is often a good place to start) one highly-preferred and one neutral or non-preferred. Prompt student to choose. Give student the object of choice, even if it is non-preferred.
- Once choice making has been established, offer two preferred objects. Photos and pictures can also be used if they are familiar to the student.
- Offer choices from a field of three or more using objects, photos or pictures.
- For students who can read, offer choices from a list of words

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Choice-making is a communication strategy that promotes independence for students with ASD

- Have student choose which activity to do first and last on a first/then board.
- Have student create their own schedule by selecting activities and sequencing them in order of preference.

TOPIC OR THEME BOARDS

These are designed to assist students in participating in structured activities or discussions. Select vocabulary that is highly relevant to the theme or topic. Photos, pictures or text can represent vocabulary items. Boards can be used to request, comment, ask questions, or re-

Topics boards facilitate participation in structured activities or discussions.

spond to questions. Teachers and staff should provide frequent modeling of this communication strategy. Boards can be made from laminated paper, arranged on a talking symbol board, or created on an iPad or tablet.

- *Suggestions*:

- Class photo board for:
    - Identifying names of peers
    - Indicating who is present or absent at school each day
    - Requesting a peer to work with or sit next to
    - Answering questions about characteristics or attributes
- Story book board for:
    - Identifying characters in a story
    - Requesting the page to be turned
    - Completing repetitive story lines
    - Answering "wh" questions
    - Making comments about the story
- Art activity board for:
    - Requesting materials
    - Choosing colors
    - Asking for help
    - Describing own artwork
    - Commenting on the artwork of others
- Weather board for:
    - Answering questions about the weather
    - Commenting on the weather
    - Making predictions about the weather
    - Identifying seasons
    - Talking about appropriate seasonal clothing/accessories

PERSONAL COMMUNICATION BOOKS

Personal communication books allow students to share information about themselves with others. They should be highly customized and include items which are of specific interest to the user. It is helpful to organize items into categories (i.e., food, toys, people, places, activities). Include the student in the selection of vocabulary, and also enlist the help

Mini wallets make great personal communication books – they are portable and stylish!

of teachers, staff, family members and friends.

- *Suggestions:*

- For early communicators, start with just a few pages and limit the number of icons per page. Use photos of actual objects whenever possible.
- Frequently review the book with the student. Talk about the pictures as you and the student point to them.
- Train school staff and peers how to use the book.
- Include text with pictures and photos to enhance word recognition skills.
- Add new vocabulary as student develops new skills and interests.

COMPUTERS, IPAD AND TABLETS

Current research clearly supports the use of computer-based technology for students with autism. Visual screen displays are highly appealing to this population, as are the buttons and controls used to operate the devices. I'm often astonished at how quickly a student with autism can learn to navigate an iPhone
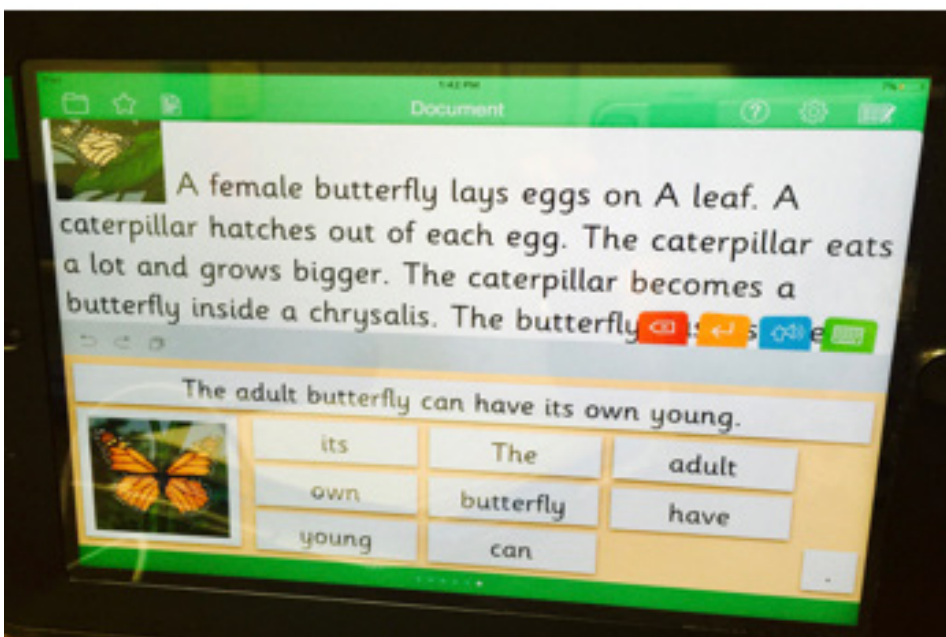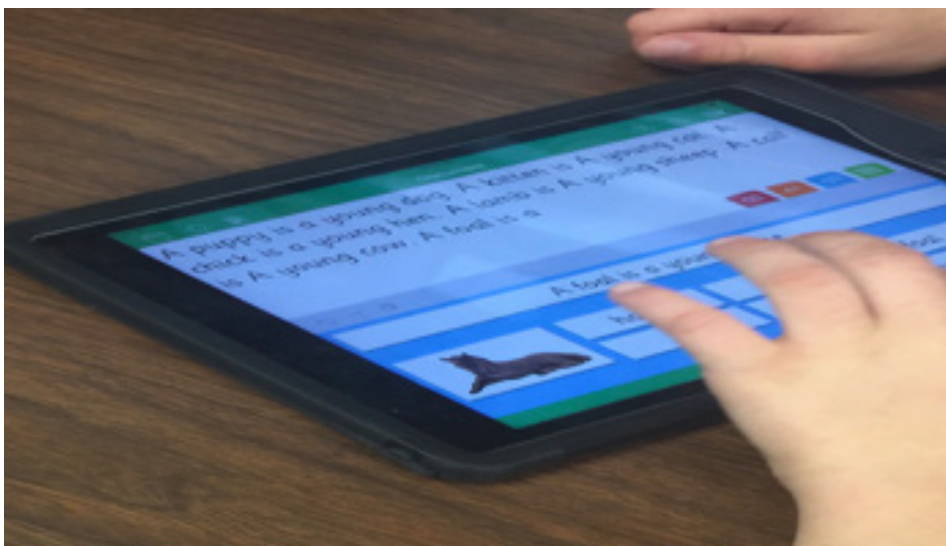
A tablet computer is ideal for enhancing vocabulary and sentence formulation skills.

are not learning tools. This can easily be done using Guided Access on an iPad. Another option is to provide a separate device that contains only learning activities.

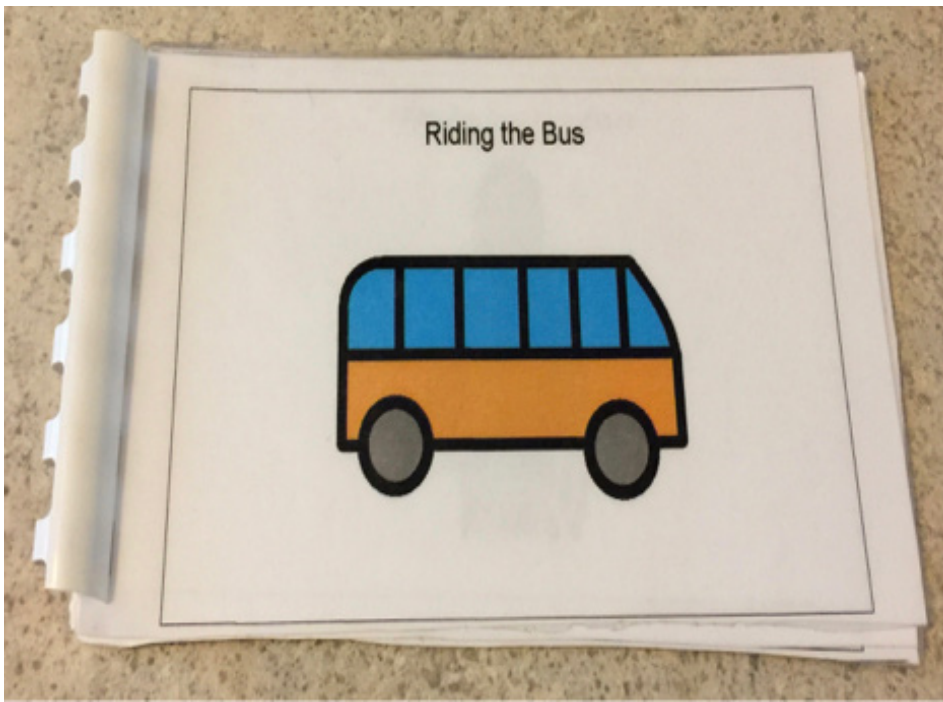- When selecting learning apps or software, it's important to match the activity to the ability level of the student while also considering their personal interests. You'll know it's a good match if the student remains engaged for at least five minutes with little or no prompting.

- Enlist the help of peers to serve as tutors and role-models during computer based instruction.

SOCIAL NARRATIVES

This is an evidence-based strategy that incorporates the use of visuals to teach social skills. Social narratives are short stories designed to help students with autism understand social norms and behave appropriately in specific social environments. They are also used to prepare students for transitions and reduce anxiety during stressful events. Social narratives can also be used to assist students in completing tasks independently, similar to an embedded task schedule.

- *Suggestions:*

- For early communicators, stories should be written in the first person so that student can make a personal connection to the story.
- Use actual photos rather than pictures for students who are very concrete thinkers.
- Stories can be created in paper book form, or on a tablet using a story-telling app.
- Encourage students to help create their story by selecting pictures or photos, or even drawing pictures.
- Read the social story with the student, and have it available for the student as a visual support during the activity or event.
- Students who have developed basic literacy skills can assist in writing their own social stories.

or iPad! It can be tricky, however, to convince a student that this technology can be used for more than just playing games or watching movies. Far too often I see it used as a reward rather than a functional learning tool. Computer-based technology is a perfect tool for creating differentiated curriculum within the classroom setting, allowing for independent learning and practice of skills. Furthermore, students with autism engage easily in computer-based instruction, often demonstrating academic skills that have previously gone undetected.

- *Suggestions:*

- Do not refer to learning activities as "work" or you will almost certainly get a negative response. Instead, tell the student exactly what you will be doing, while also making it sound enticing (i.e., "counting dinosaurs," "matching colors" or "reading about trains").
- Provide a selection of two or more activities from which the student can choose.
- Restrict the use of games or movies that

Riding the Bus

Writing a story about a stressful event can alleviate anxiety.

VIDEOS

Video Modeling is an EBP that is used in the same manner as social narratives to enhance social skills, teach appropriate behaviors, and guide students in completing tasks independently. Although there are numerous apps available that provide pre-made videos, it's very simple to make your own using a smart phone or tablet computer. The videos can star family members, peers, members of the community, the student or a combination of performers. Videos can also be used as a communication tool to share information with others.

- **Suggestions:**

- Have family members video tape the
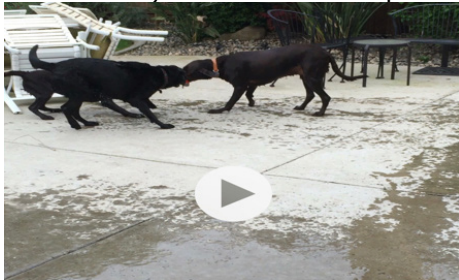
Videos can be used to share about family, pets and favorite activities.

student during family outings and vacations to be shared later with peers.
- Help student select videos of high interest topics to share with peers.
- Allow student to give a class presentation using video format.
- Include captions in videos to enhance literacy skills.
- Enlist the help of peers and "techies" on campus to produce your own Video Modeling movies.

SUMMARY

The seven interventions described in this article are meant to serve as a framework for implementing effective AAC strategies for students with autism spectrum disorders. The implementation of specific strategies is highly individualized and always starts with a comprehensive assessment of skill sets. This requires frequent collaboration among IEP team members. A speech-language pathologist should play a key role in this process. Keep in mind that strategies will change as a student's skills, environments and personal preferences change. Students with autism spectrum disorders are best served when the professionals

with whom they work stay current with research and technology, consider the perspectives of the client, and value the professional experience and wisdom of all team members

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The American Speech-Language Hearing Association; Roles and Responsibilities of Speech- Language Pathologists With Respect to Augmentative and Alternative Communication: Position Statement (http://www.asha.org/policy/PS2005-00113/) ∎

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Access and Engagement using Assistive Technology for Students with Significant Disabilities

Technology seems like it's taken over our world. It's opened new directions of possibilities. Yet, as our world continues to move forward with ever increasing speed into new frontiers of technology, we must stop for a moment and look at how everyone benefits from it. Can everyone access the world through mainstream technology? For people with disabilities, the field of technology also includes more specific devices and adapted supports. This specific category of technology is termed Assistive Technology (AT). Assistive Technology provides access for greater independence for anyone who may need more support. In the classroom, it could mean a pencil grip or highlighting tape or even a wheelchair or communication device depending on the needs of the student.

Assistive technology devices are identified in IDEA 2004 as: Any item, piece of equipment or product system, whether acquired commercially off the shelf, modified or customized, that is used to increase, maintain, or improve the function-

al capabilities of children with disabilities.

Advances in the field of AT have increased the level of freedom for individuals with disabilities, but in some classrooms teachers are still at a loss when it comes to utilizing it. In this article we will be looking at two main categories: Environmental control in the form of switches and communication tools known as Alternative and Augmentative Communication (AAC). It will give a basic overview of switches and AAC for those of you who might be new to the field of special education or to the population of students who might need AT support. This article will introduce switches by looking at what they are and how to use them, and AAC devices at an introductory level. We will look at alternatives to hand over hand support and what is beyond cause and effect, then look at some examples of how to incorporate AT into the school day. How often have you walked into a new classroom and found a closest full of devices and had no idea what the devices are or what they do.

First off, it would be the ideal situation if all the students in your class had an individual dedicated switch or communication device, but it's often not the case. Even if you don't have a device for every student yet, you can still use AT for instructional purposes as a group process. You also don't have to know everything about AT to get started. You have to be willing to provide opportunities for your students to have access to the classroom that includes content and peers. Access opportunities means both interaction with content and socialization with peers. AT can be considered an umbrella for nine different categories that allow someone to gain freedom and independence over their world. Assistive Technology Categories include: Daily Living Aids, Mobility & Ambulation Aids, Vision & Hearing Technology, Seating & Positioning, Educational Aids, Sensory Aids, Communication Tools, Environmental Control and Computer Access Adaptations.

A switch is a starting place for using and integrating AT into classroom rou-

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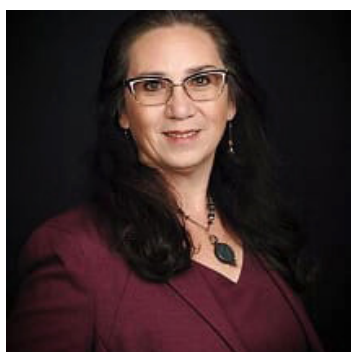
TANA DONAGHY, Tana Donaghy has worked in the field of special education for over 20 years. She provides support to districts, county offices and SELPA's. Her expertise is with students who have moderate to severe and profound disabilities. She trains teachers, administrators and parents on curriculum and instruction and programming for children with special needs. She is a state and national presenter on topics ranging from curriculum and instruction to programming and beyond for students with disabilities. She has teaching credentials in "Multiple Subjects" and "Special Education" with an Ed.D. in Educational Leadership. She has worked with students in general education as well as special education. Now a greater amount of her time and focus in on inclusion for all kids.

tines. It can provide opportunities for active engagement in the learning process, in recreational activities and enhance socialization and communication skills. Many times the first introduction people have to a switch is something that looks like a "button". Switches come in all shapes and sizes and once the adults and the students learn to use them, they can open a world of possibilities. Someone once asked me for ideas about what to with a particular student. The teacher did not know what to do with this student who had almost no movement, and no visible way of interacting or communicating. Sometimes we are stumped because as teachers, we might not be aware of some of the specialty switches available. There are switches that are activated by breath (sip and puff) or minimal motion (motion sensor). If you can find a switch that matches the needs of the student, than a whole new world is opened to him.

A switch can provide access to communication devices, environmental controls, computer software and even some mobile devices. There are many different kinds of switches from very basic ones to more specialty ones. There are large surface ones and small surfaces ones, ones that are controlled body parts like feet or face movements, and ones that require very light pressure or no pressure at all. Today you can find some of these in mainstream stores. Remember the clapper to control the lights? How about motion sensors for backyard lights? There are literally hundreds of thousands of different kinds of switches. The Switch Progression Road Map, by Ian Bean is the best switch guide available and it is free.

Switches can also provide access to many electronic items. An easy way to

grasp the concept of a switch is to think of a light switch. The switch is used to turn the lights on or off. Our basic AT switch does the same. A switch is a great way for a student to take the first step in gaining some independence over their world. A switch can be used with anything that requires a battery by inserting a battery interrupter. Even if something doesn't require batteries you can still activate it using other types of devices like the Powerlink by AbleNet. This allows things with a plug to be activated using

Using AT for Reciting the Pledge of Allegiance

a switch. Today there are switches that are wireless and there are switches activated by using Bluetooth technology. There are several great resources to find out more information on switch types. AbleNetinc.com has several pages in their resources section under "Assistive Technology (AT) Resources".

You are only limited by your imagination when it comes to how to use a switch. In the classroom, switch use is usually introduced by starting with simple cause and effect. Simple cause and effect happens when the student activates the switch and something happens. This is often done with switch toys for play or exploration. It can also be done for participation in a classroom activity such as

cooking. A switch might be used to turn on the blender or the radio or tape player to start the music for a song. It could be used in a leisure activity like turning on a fan or light. At the higher use end, a switch can be used for motorized wheelchairs and even communication devices.

Switches are wonderful tools that can be used far beyond just cause and effect. They can be used in content areas as well. Research shows that when we get kids actively engaged with the story, they will understand and remember it better. Using their switches, students can actually reenact stories, poems and plays. Linda Burkhart has an example of the Three Billy Goats Gruff. The bridge was created using blocks and the troll was placed on top of the bridge. Students could activate a "Billy Goat" switch toy to knock over the bridge and destroy the troll. Consider using a switch to activate a Waterpik® to water plants, or pressing a switch to create steam from a vaporizer in science. In history and social studies we could learn about transportation by racing cars and trains using switches. Another example is to cut a door out of a box and have the child walk the switch adapted toy pig or cow into "Old MacDonald's Farm" or a doghouse, etc. Pruett, M (2014) gives a great example of the way a switch can allow a student another way to demonstrate understanding of a concept. This is universal design in action.

Megan looked at the items placed before her: spoon, Lego®, rubber wheel, block, drinking glass and key. Using her Dynavox®, she requested her friend, George, to place an item on the piece of wire. Megan then pressed a switch waiting to see if the switch would turn on the light bulb. After testing each item, Megan would point to the correct word "insulator" or "conductor" that her teacher had

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taped to her lap tray. George then placed it in the appropriate box that was labeled insulator or conductor.

Also, don't forget that switches are great for computer access. With the computer, a student could have more than one switch do different things. Switches are used with scanning systems for greater access to software programs. When deciding on what kind of switch to use with a student, you'll want to consider several factors: size of surface area, type of activation (push, sip/puff, etc), and amount of pressure to activate it, durability, even texture. Switches come in a variety of styles to meet every need.

Beyond simple cause and effect, switches can also have different options for activation. Another level of activations can be a latch. This is where the switch can be activated once to turn something on and must be activated again to turn it off, or it can cause the device or tool to turn off after a certain amount of time. Then the student must reactivate by using the switch again. Linda Burkart has a dynamic resource to teach student scanning skills using their switch: Stepping Stones to Switch Access (Two Switch Step Scanning).

Another area that falls under the umbrella of AT and is often a major area of concern is our classrooms is AAC. AAC can be defined as any device, system, or method that improves the ability of a child with communication impairment to communicate effectively. It can include sophisticated devices and systems (sign language, communication boards, or speech-generating devices) as well as less sophisticated means (pictures or objects used as symbols, etc.) AAC systems may include a number of different modalities to allow students to express thoughts,

needs, desires and ideas. That is the purpose of communication. Many of our students are non-verbal or emerging communicators. Often times these students have accompanying behavior issues. Every behavior is communicative and maybe some of the behavior stems from lack of being understood.

Teachers are faced with all kinds of challenges when a student is non-verbal or has emerging verbal skills. AAC is often a confusing issue for teachers. Some things to consider when thinking about
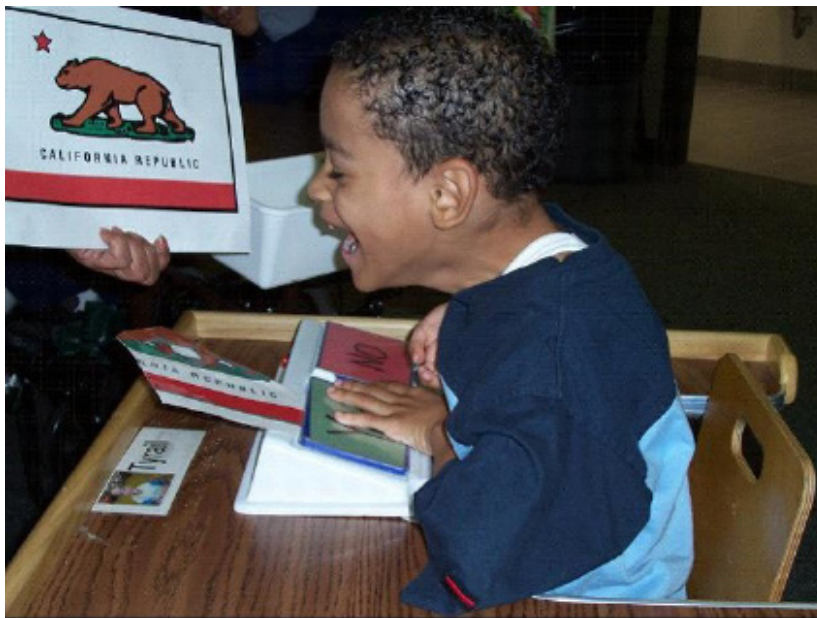

Identifying the California Flag or American Flag

incorporating AAC into the classroom are what kinds of devices are available, how to get students to respond to a voice output device, what to record on the devices and the concept of the "student voice" when using a speech generating device. In this article we are not talking about dedicated devices for individual students. We are considering including and using AAC to enhance instruction, access and engagement for all students.

AAC has a continuum of no tech to high tech options. No technology or low technology options might include a communication board or book, eye gaze system or cards. Other AAC choices could be single message or multiple message devices which have a voice output. These are of-

ten called Voice Output Communication Aids (VOCA) or speech generating devise (SGD). These devices are electronic and may use batteries or need to be charged. By allowing a student to use some form or system to enhance and supplement communication, studies show that improvements can be seen in social interaction, school achievement, and self-esteem.

When you are just starting off using communication devices in your classroom, give yourself a break. First, don't be embarrassed if you don't know what the device is or does, ask someone. Second, if you have students who are non-verbal, then you need to implement some kind of system in your daily routines. It doesn't matter if Sally doesn't have her own device yet, start by using pictures with the whole class. There are great applications today that you can put on your phone or ipad to use for communication. AbleNet has a free one called Sounding Board that is easy to add pictures and voice message. If you have only an iPad or other single message devices, you can use them for simple responses. This will introduce your students to the concept of responding to questions or making choices. They will get immediate feedback from you and your staff. There is nothing more powerful than that human voice. Voice output devices should always be considered as a choice to use when exploring and growing a communication system. If you have ever tried to learn a new language, think about how many times you have to hear a word before you can say it. Hearing the word with an output device only adds to the number of times a student hears that word and begins to attach meaning to it.

If our goal is communication then we want to remember that multimodal com-

munication is a natural means for expression across the board. Consider all the different modalities we use to effectively communication our message: speech (verbalizations), verbal approximations, vocalizations (and voice inflection), gestures (e.g., pointing), manual sign or sign approximations, facial expressions, eye gaze, body orientation or movement and proxemics (approach/avoidance to a communication partner), etc.

Augmentative Communication is defined as augments or adds to the methods the student already has. We want to build a system that allows student to use an array of ways to communicate with their world. Responses and choices are great ways to teach the students in the classroom what to do with a communication device. People often forget that we need to model for our students how to use it. Just because you set it in front of the student doesn't mean they know what to do.

This brings up a couple points to remember as you jump into the lake of AAC devices. Remember it doesn't matter if your student doesn't understand spoken language, or what those symbols, pictures, or signs mean or even that their actions can make things happen. These things are not prerequisite to communicating. They will learn them if you are consistent and provide the opportunities. Next thing to remember, as tempting as it is, don't say "hit the button" or "hit the switch". If that is all a student hears when presented with the communication device then that is what he or she will think it is. The recording on the device becomes the voice belonging to the student. Record what the appropriate answer would be for the student to respond with. If I am asking the students to say "good morning", then the phrase "good morning" would be recorded on the device. If I want them each to respond to me when I say good morning to them, then the single message is appropriate for a response during the interaction. I would pass it around from student to student and say "Good Morning Joe", offer the device to

Joe and allow Joe to say "Good Morning". You are asking the question or providing choices for the student to answer or make. When considering what messages to record, think about how many times a day you respond in a social context, from requests for objects to social greetings, comments and shared experiences to answers and questions. Think about simple comments that other peers, the same age might say or phrases that are popular among that age group.

Think about what will create an opportunity for peer interaction or simple adult interaction. One way to keep all your students engaged in an activity that involves waiting their turn, might be to give a student a device with an encouraging message on it for them to activate while waiting their turn. An example might be to have Adelina tell Jose, "Great Job, you can do it!" while Jose is doing something like activating a PowerPoint with a switch or making a choice. What kind of opportunity will be motivating to a student? I used to have my student deliver messages to other classrooms to create communication opportunities. Read books using low tech AAC devices to speak the repetitive lines of the story. My classroom would read an Eric Carle story and we would then re-enact it as a play. Each student would have their own character with their lines recorded into the AAC device. Students had to say their lines as the story was read.

When thinking about access and engagement, another great resource is the Action Dictionary by AbleNet, Inc., a manufacturer of Assistive Technology Devices. The "Action Dictionary" matches specific action verbs to possible assistive technology solutions. This resource is available for a free download through the iTunes bookstore or as a download for computer access.

A final thing to remember is to allow the student to intentionally activate the device on his or her own. My staff liked to lift the device to the students hand underneath or to place the students hand on the device using hand over hand support.

What is the student learning using this method? The student may be learning to wait on someone else to do it. Instead, find an easy location for the student to reach, and allow him to intentionally activate device. You could start by placing it on a table or desk in front of the student and guide the hand near the device by using the students elbow. Using a hand under hand method of prompting allows the student more impetus to do the action. Don't forget that the hand might not be the best access point for the student. Maybe it is easier to move the head, elbow, or foot. Try out different access points or placement of devices using mounts. You can find more information on mounts and mounting systems through AT companies like EnableMart and AbleNet.

Using AT in the classroom does enhance every aspect of learning and increase educational benefit by getting your students activity engaged in the instructional process. It will support social interaction, school achievement, and self-esteem. This is truly how we transform our special education classrooms in a positive learning experience for all students.

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Access, Technology and Communication options for the Disabled Population: Information Shared. Enabling Solutions http://atclassroom.blogspot.com/2007/07/fifty-nifty-ideas-for-simple-switch.html

Nifty Ideas for Simple Switch Activities Let's get these kids involved! ■

More than Words: Examining the Augmentative Role of AAC

We have come a long way with respect to public awareness of the need for Augmentative and Alternative Communication (AAC) for individuals who are nonverbal. For many who have no natural speech and are not perceived to be likely to develop natural speech, AAC is considered, explored and implemented. Unfortunately, we do not yet see the same degree of consideration or implementation of AAC for those who have developed some natural speech. For individuals (with communication needs) who are described as "verbal," the term "Augmentative" in Augmentative and Alternative Communication is not often considered. In my experience, many people refer to a child as "verbal" when that child communicates some information using intelligible natural speech, even if that child has an intelligible expressive vocabulary of perhaps only ten or twenty words. In stark contrast, a typical four-year-old has approximately 1,600 words in their expressive vocabulary and at five years old, kids are typically using between 2,200 and 2,500 words expressively (Lanza and Flahive, 2008).

COMMUNICATION AUTONOMY

The ability to say what you want when you want to whomever you want

Rachael Langley AAC Specialist

There are several factors that are likely to contribute to the common tendency to skip over individuals that have natural speech when considering AAC. First, many teachers, professionals, and family members continue to mistakenly believe that use of AAC will prevent further development of natural speech. Although
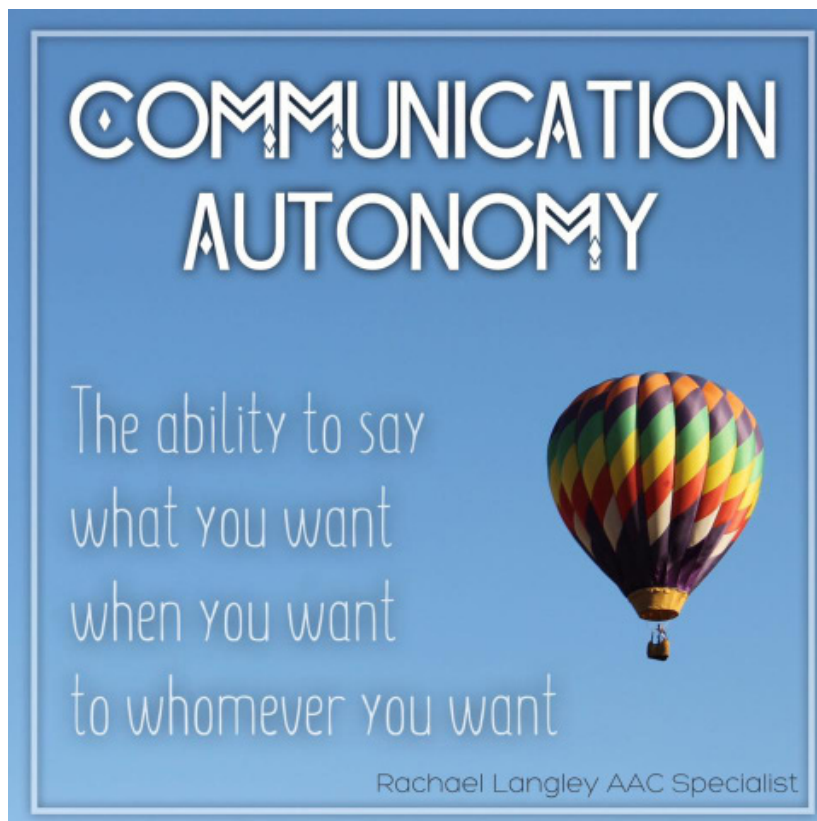
LAUREN S. ENDERS, MA, CCC-SLP is a speech-language pathologist currently serving as a full-time Augmentative Communication Consultant and Assistive Technology Consultant for Bucks County Intermediate Unit in Bucks County, Pennsylvania. She has had a career-long passion for using assistive technology to support students with complex communication needs, complex bodies, mobility impairments, cognitive impairment, autism, and other disabilities. Lauren is most passionate about supporting individuals with complex communication needs using Augmentative and Alternative Communication (AAC). In recent years, she has capitalized on the power of social media to share her passion and expertise for AAC, assistive technology, and iOS technologies. Lauren curates and shares information about AAC and other Assistive Technology supports on her social media accounts, including Pinterest (www.pinterest.com/lasenders), Facebook (www.facebook.com/ LaurenSEndersMaCccSlp) and Twitter (@lasenders). Lauren presents at national and international conferences such as Closing the Gap, ATIA, and ASHA as well as smaller conferences and speaking engagements.

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research has indicated that this belief is a myth, the myth continues to persist. Second, some educators and therapists who support individuals with a wide range of communication needs do not consider the breadth of language functions that must be developed and used for an individual to communicate effectively. Although the intentions of professionals are good, lack of sufficient training can lead professionals to aim too low when setting goals and expectations for their clients with complex communication needs; lack of knowledge sometimes leads teams to focus narrowly on the communication functions of making choices and making requests to satisfy wants and needs. Third, therapists and teachers do not always consider typical language development milestones when determining whether an individual would benefit from AAC. Without comparing someone's expressive language abilities to milestones typically reached early in development, it's easier to feel satisfied with a more limited array of expressive language skills. Lastly, some believe that individuals who have successfully communicated via natural speech in some situations and environments are being lazy, uncooperative, or manipulative when they are unable to communicate the same information in another situation or environment. When people are viewed as noncompliant as opposed to having trouble communicating (due to any number of factors), therapeutic and educational focus can shift to molding compliance instead of providing badly needed language supports, AAC and modeling of AAC.

While many in our field are working tirelessly to discredit the myth that use of AAC to augment natural speech will prevent development and use of natural speech, there is still work to be done. Many educators, professionals, families and support staff continue to have concerns that providing AAC to those that have natural speech will have negative consequences or is unnecessary. Reluctance to initiate use of AAC with those who have natural speech often reflects several misconcep-

tions (each discredited through research in the field). First, people mistakenly believe that using AAC with someone who speaks somehow indicates that they have given up on continued development of natural speech. Second, there is a common misconception that AAC is "easier" than speaking and will therefore be used in place of speech or serve as a "crutch". Third, there is a fear that use of AAC to augment speech means that the individual will then always require AAC. Research in the field suggests that not only is each of these assertions false, but initial findings suggest that use of AAC may support development of natural speech (Millar, Light & Schlosser, 2006; Blischak, Lombardino & Dyson, 2003).

In a helpful 2010 handout from Rocky Bay entitled AAC Does Not Hinder Natural Speech Development, the following quote was highlighted "AAC intervention has significant benefits in the development of communicative competence and language skills: the present best evidence analysis provides data that suggest AAC interventions can also have positive benefits for natural speech production." (Millar et al, 2006, pg. 258) The 2010 Rocky Bay handout also pointed out that AAC is a form of aided communication while speech is unaided; speech is therefore the more efficient mode and will be used as a primary means of communication (Romski, 2005).

Like all of us, individuals with complex communication needs will select the easiest and most efficient mode to get their messages across. If natural speech meets their needs in any given situation or environment, they will use it! The problem, in many cases, is when natural speech alone is insufficient to meet someone's communicative needs. It is at those times that AAC becomes not only necessary but invaluable.

In my work as a full-time augmentative communication consultant, one of the most common challenges I encounter is a well-intentioned, but narrow focus on teaching only requesting and choice-making skills. Many professionals I meet mistakenly believe that requesting and choice making are prerequisite skills and must be mastered prior to working on other functions of language (such as commenting and asking questions). While it is very important that we be able to express what we need and want and be able to make choices, effective communication involves far more than simply expressing what we want, need, and choose. In their article Communicative Competence for Individuals who require Augmentative and Alternative Communication: A New Definition for a New Era of Communication?, Light and McNaughton (2014) share a powerful quote from Bob Williams, a man who is an expert communicator via AAC. Bob said, "The silence

of speechlessness is never golden. We all need to communicate and connect with each other – not just in one way, but also in as many ways as possible. It is a basic human need, a basic human right. And more than this, it is a basic human power..." (B. Williams, 2000, p. 248). Communication functions include (but are by no means limited to) calling attention, denying or protesting, requesting, making choices, using social phrases and making comments (to establish and maintain social closeness), responding to questions, asking questions, and directing action of another person (L. Burkhart, 1993). When we consider the many functions language serves, it becomes clearer that many individuals who have some natural speech may not have sufficient skills to meet all of these language functions and would therefore benefit greatly from AAC.

Another factor that seems to limit consideration of AAC for students that have communication needs but have natural speech (which can vary dramatically from a few words to thousands of words) is that we can easily lose sight of how early complex expressive language develops in typically developing children. It can be difficult to clearly see the limitations in the natural speech and language of those with complex communication needs until we compare their language to the complex and varied skills typically acquired by age five. According to the American Speech Language Hearing Association (ASHA) in their publication How Does Your Child Hear and Talk?, children reach the following expressive language milestones by age five.

1-2 YEARS
- Says more words every month.
- Uses some one- or two- word questions ("Where kitty?" "Go bye-bye?" "What's that?").
- Puts two words together ("more cookie," "no juice," "mommy book").
-

2-3 YEARS
- Has a word for almost everything.
- Uses two- or three- words to talk about and ask for things.
- Familiar listeners understand speech most of the time.
- Often asks for or directs attention to objects by naming them.
- Asks why?

3-4 YEARS
- Talks about activities at school or at friends' homes.
- Talks about what happened during the day. Uses about four sentences at a time.
- People outside of the family usually understand child's speech.
- Answers simple "Who?" "What?" and "Where?" questions.
- Asks when and how questions.
- Says rhyming words, like hat-cat
- Uses pronouns such as "I, you, me, we and they."
- Uses some plural words like "Toys, birds and buses."
- Uses a lot of sentences that have for or more words.

4-5 YEARS
- Responds to "What did you say?"
- Names letters and numbers.
- Uses sentences that have more than one action word like jump, play, and get. May make some mistakes, like "Zach got two video games, but I got one."
- Tells a short story.
- Keeps a conversation going.
- Talks in different ways depending on the listener and place. May use short sentences with younger children or talk louder outside than inside.

If we consider that research shows that AAC does not hinder speech development, take into account how sophisticated language is for even very young children, and consider all of the functions that language must serve, we will be far more likely to augment the natural speech of those with communication needs using AAC, and do so at a much earlier stage.

There is another factor that sometimes appears to prevent professionals

Open the AAC Gate

See the potential.
Connect.
Build language.

and families from exploring AAC for individuals who have (some degree of) intelligible natural speech. This factor is a perception that if someone can communicate effectively with natural speech with some people or in some situations, they must be able to do so with all communication partners and in all situations. Some see failure to communicate in some situations but not in others as a negative behavior and an unwillingness to communicate and comply. While negative behaviors certainly exist, they may be missing the fact that many individuals with complex communication needs who are considered to be "verbal" are not always able to use or access their speech and language skills. There are many factors that can impede someone from using a communication skill they exhibit some of the time. Some of these factors include the existence of pain or physical discomfort, fatigue, stress, anxiety, excitement and sensory overload. When inability to communicate is perceived as noncompliance, supports and prompting methods can shift to attempting to achieve compliance in an individual who may already be frustrated or agitated, but may not be trying to misbehave. Unfortunately, using

methods to encourage compliance when the escalation has been caused by a communication breakdown can cause further escalation and an increase in challenging behaviors.

The need for AAC to be explored as a potential support for those who have some natural speech became far more apparent to me when I met a young woman at one of my AAC presentations about two years ago. Josie, who describes herself as a young autistic woman, came up to speak to me during a break. She approached me holding an iPad but spoke verbally with perfect articulation and perfect syntax. It wasn't until she also communicated with me using her iPad (and a robust AAC app), that I realized she also uses AAC. After getting to know Josie much better through frequent conversations online, I learned far more about her struggles with language and why she refers to herself as a "part time" AAC user. Josie explained that there are some tasks and functions of language that are so challenging and cause so much anxiety, that they prevent her from communicating her thoughts effectively. Additionally, she has noted there are many times when current stressors, anxiety, excitement, fear or sensory overload override her expressive language skills and again, prevent her from relaying her thoughts clearly

through speech. Josie has a very large vocabulary, can speak in sentences within connected speech, and is literate, which is often not the case in individuals with complex communication needs; however, her story and thoughts about the need for AAC (and extensive modeling of AAC) even for those who are verbal is incredibly valuable for anyone working with individuals who have complex communication needs.

After realizing how valuable Josie's insights have been to me, I asked her if she would mind if I shared her thoughts publically with others who are learning about AAC, its applications and implementation. Josie was excited to share her thoughts with the people who deliver services and care for those with complex communication needs, particularly individuals who have speech, and graciously agreed. Throughout our discussions, Josie has shared thoughts and experiences about her use of AAC as a person who is verbal (and according to her, at times "hyper verbal"). Recall that Josie speaks clearly and with perfect syntax. It's likely that some communication partners who don't know Josie and have not witnessed her communication breakdowns, self-stimulatory behaviors or other atypical behaviors might believe that her language is sufficient to meet her communication needs. In her own words, however, she explains that her natural speech is often insufficient.

One day, when messaging with me about an upcoming physical therapy appointment, Josie said "I'm just so worried with me starting PT there… that I'm going to hurt myself because I can't tell them when it becomes too hard. I've had other experiences where I was unable to say 'no' or that something was wrong. I basically had compliance training growing up… and I've only recently realized that that's the root of my not being able to stand up for myself, because I've spent most of my life being told I cannot refuse. It's honestly really scary knowing that when bad things happen, I can't stand up for myself. I don't think she (therapist) at all under-

stands that I need prompting. If she asks me how I feel about an exercise, I will always say 'it's fine', or maybe that it makes me tired… I have to be prompted to say it on the talker, otherwise I say (it) verbally, and when I say (it) verbally, it's just auto responses. I'm very bad at prompting myself. I'm not exactly sure why, maybe it's fear, maybe I'm just not used to it, I don't know. I tend not to want to create anything that may be seen as a 'hassle'. I wish I was better able to prompt myself to use my talker, it's so hard to be able to talk, and yet not be able to say what I need to. Like, I can be super hyper verbal, but I can't say 'this is too hard'. Story of my life…

Internal voice and external voice often don't speak to each other…then there's when I go non-verbal all together. Like, I can talk, but that doesn't always mean communication. Though I do go non-verbal as well when really stressed. And then there's all the anxiety around self-advocacy and saying how I really feel. That's NOT HELPING. Honestly there should be a diagnosis called "passive communication disorder". Kinda like selective mutism, but instead of going mute, one just goes along with whatever, even if internally screaming to say what one really wants to. My brain when I'm trying to communicate something important- 'omg what… are you doing?!? SAY THE THING!! Omg no! Shut up! That's not anywhere near correct!' My mouth apparently has its own agenda."

Powerful, right? I later asked Josie some interview-style questions to get a deeper understanding of her communication and AAC needs.

Lauren: "How would you explain WHY you need AAC to people who see you as bright and articulate and very 'verbal'?"

Josie: "My brain and mouth don't always say the same things and sometimes if something is hard, I can't say it verbally, it gets stuck or I'm too intimidated, or I don't want to make anyone upset.

Lauren: "What are some situations that create a need for you to use AAC?

Josie: "Sometimes when I'm just fine.

It (AAC) feels better. I also use it to process how I'm feeling and self-talk. I like the verbal feedback."

Lauren: "Ah. So the voice output is key for you. Good to know. Some people are very intent on providing paper supports and reluctant to move to voice output, especially for individuals with natural speech. I can't tell you how many classrooms I walk into where teachers say 'He's verbal, he doesn't need AAC.'"

Josie: "If he's verbal they should let 'him' try different AAC types and then make his own choice, and by verbal, I generally mean very verbal… anybody with under 1k words should have AAC in place or at least there if they need or want it."

Lauren: "Agreed, but how would you explain how they'd benefit…as an autistic person?" (Josie prefers to be called an Autistic person as opposed to a person with Autism.)

Josie: "OK, How many adults have said something they didn't mean only to realize JUST after it left their mouth? That's what it's like a LOT of the time….and how many adults have been afraid to speak up? That's also what it's like a LOT of the time, except both things can be about everyday things. More like… that wasn't what my brain was thinking. My mouth is just making stuff up now. A LOT of Autistic adults were … um… what's the word…made to feel like a burden or that we are less/our opinions matter less. Even self-advocacy is discouraged if neurotypicals feel it's not the right kind or whatever nonsense. And us hyper verbal people went through life being told 'stop talking all the time' …um, so asking store workers for items, asking for directions, anything that involves talking to other people generally… in those kinds of situations what comes out is whatever will make the person happiest/least unhappy.

Lauren: "How SHOULD they prompt you or support you - especially with respect to your talker?"

Josie: "So, teachers never really prompted me. I had no supports in place in school, despite clearly needing them. Most teachers thought I was attention seeking and/or lazy …Teachers didn't care and I fell through the gaps. Even my family thought I was being lazy. I was trying as hard as I could but it was never enough. So, I didn't have the teacher prompting experience or anything. I DID have that happen in the hospital though. I was labeled attention seeking/borderline personality disorder, which I don't have… and manipulative. I hate that word. I can't hear it without feeling angry. Behavior IS communication. Non-compliance is also communication. And it's a way of attempting to regain some sort of control in a life where others control almost everything. Any other questions?"

Lauren: "(I) really just want people to hear what you wish you could have told them through the years, specifically about communication and what you needed from them..(things) that you didn't get."

Josie: "Oh, when I have high emotions (normally frustration/anger/pain), my mum gets upset with me. Teachers thought I just wanted attention. I needed help with communication and nobody saw that… wish people could have taken the time to help me…those that DID see I was struggling

It's a slap in the face to know that people know you're struggling, and yet do nothing to help."

Lauren: "That's why I'm trying to share your experiences."

Josie: "Feel like people have no idea where to start - don't spend the time searching for what to do…especially teachers and family. I think it doesn't matter where they start."

Lauren: "I totally agree. 100%. You learn along the way…just need to be open minded and willing to learn and even make mistakes."

Josie: "As long as they try. Doing something and maybe messing up is better the doing nothing at all. I'd rather work with someone who over-uses my talker and prompting. Then someone who does nothing at all."

Lauren: (Josie has very frequently lamented about people's inability or unwillingness to use her talker with her and model for her, which prompted my next question.) "Would you say the biggest thing you needed that you didn't get was support with communication - modeling/encouragement to use alternate means??"

Josie: "Yeah."

Once again, Josie's skills, needs, and experiences are not the same as all others who have some natural speech and complex communication needs; however, I am hopeful that the experiences she shared with us shed some light on what others may experience.

In the conclusion of their article *Augmentative communication and early intervention: Myths and Realities*, Romski & Sevcik (2005) made the following important assertions,

"The reality is that it is never too early to incorporate AAC into language and communication intervention for the young child with a significant communication disability. The AAC devices and strategies are a tool, a means to an end—language and communication skills—not the end. Incorporating AAC during early communication development requires a focus on language and communication development within the context of the AAC mode… It is imperative that AAC be linked to early language and communication development. There is a strong history of empirical data to draw on as clinicians make practice decisions about intervention strategies for early communication development…. AAC is not a last resort but rather a first line of intervention that can provide a firm foundation for the development of spoken language comprehension and production. It can set the stage for further language and communication development during the child's preschool and early school years. It also can open the door for the child's overall developmental progression." (Romski & Sevcik, 2005)

In further support of AAC use with individuals who have some natural speech, Light and McNaughton (2014) reported that "Over the past 25 years, there has been a significant increase in research to advance understanding and enhance the communicative competence of individuals with complex communication needs.

BOTH RESEARCH AND EXPERIENCE DEMONSTRATE THAT

AAC DOES NOT SLOW SPEECH DEVELOPMENT.

Rachael Langley AAC Specialist

This research has established empirical evidence of the positive impact of AAC (Beukelman et al., 2007; Bopp, Brown, & Mirenda, 2004; Branson & Demchak, 2009; Fried-Oken et al., 2012; Ganz et al., 2011; Machalicek et al., 2010; Roche et al., 2014; Schlosser, Sigafoos, & Koul, 2009; Walker & Snell, 2013; Wendt, 2009) and has demonstrated that these gains come at no risk to speech development or recovery (e.g., Millar, Light, & Schlosser, 2006; Romski et al., 2010)." (Light, J. C., &, McNaughton, D, 2014)

It's my hope that as we gain and share more information about the merits of AAC use with those who are described as "verbal" (whether that means they have an intelligible vocabulary of 10 words or a thousand words), we will see a rise in consideration of AAC as a potentially appropriate augmentative support. Once we begin to consider AAC for all individuals whose expressive language does not meet his or her communicative needs, we can be sure we are doing what all that we can to help everyone meet their communication potential.

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Confessions Of A General Ed Teacher: What my Deaf and Hard of Hearing Students Taught Me About Good Teaching
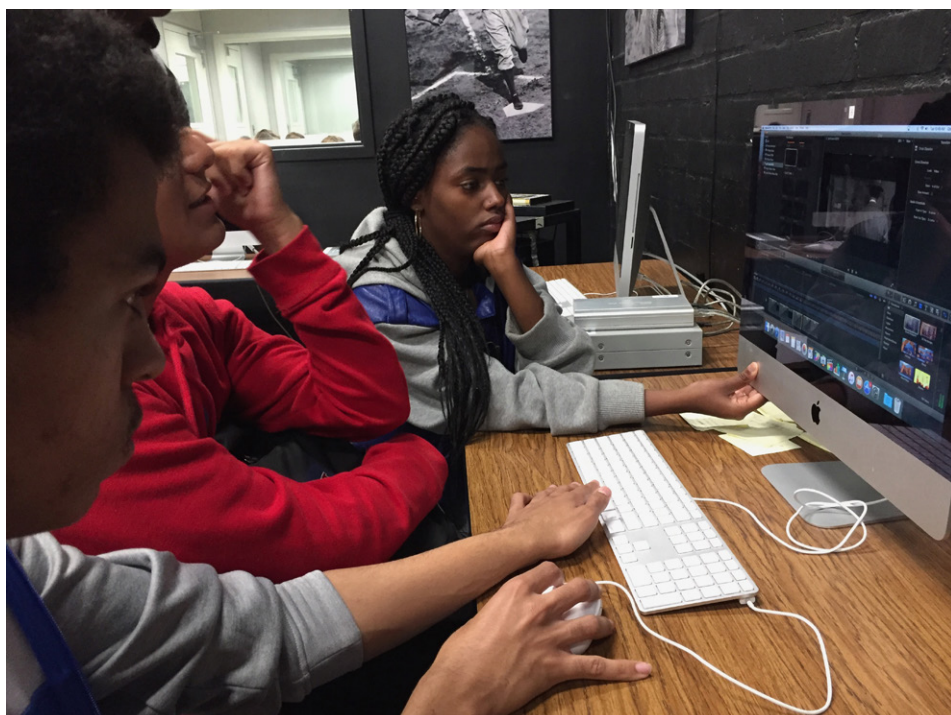
I HAVE A CONFESSION TO MAKE: I'M STUBBORN AND TOO QUICK TO JUDGE.

At the beginning of my career as a high school journalism and cinema production teacher, a deaf student enrolled in my Cinematic Arts class. This might not seem like a big deal for anyone unfamiliar with making films, but when you realize that films are half sound (think dialogue, music, sound effects), one might (like I did) question the sanity of the decision.

When the student showed up to class, I was so upset that his counselor put him in my class and I resented everything about it. How could anyone not know that movies are half sound? There was no way he could participate fully in the class or learn the skills or subject matter. Didn't they know they were setting this kid up for failure? It was an affront to my subject and to me as a professional, and I knew this student would not succeed.

SPOILER ALERT: I KNOW BETTER NOW.

As a general education teacher, I'm not alone in having these kinds of feelings when students with disabilities are mainstreamed and included in our classes. Teachers are overwhelmed with large classes, impossible amounts of curriculum to cover, held accountable for our students' standardized test scores and struggle just to keep our heads above water with classroom management. The last thing we need is another challenge to deal with.

Therein lies the cornerstone of the challenges faced by students with disabilities in mainstream classrooms. This complex set of conditions is partly about ego, pride and ignorance of teachers; partly about the system that hides students with disabilities in ghettos of spe-

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cial needs classrooms; partly about the school system that demands too much of teachers and marginalizes social-emotional wellness of all students.

This isn't just a concern for students with disabilities, para educators and support staff. For me, it raises fundamental questions about the role of general education teachers and the nature of teaching itself:

- By what criteria am I assessing students and how does that accurately measure success?
- Am I more concerned about universal standards & expectations or the personal growth of my students?
- Are we serving the individual needs of every student in my class, or are we slaves to a set of unrealistic expectations?
- What is our role in developing confidence and self-esteem in students to enhance their ability to face challenges and learn?

These were questions that I couldn't see at the time nor was prepared to deal with until later in my career when I was more confident in my abilities, and had settled into the love for my profession and students.

I was only in my third year of teaching and I was still trying to make a name for myself in a school of high performing teachers in "serious" subjects like AP English and Honors Chemistry. Overwhelmed with managing equipment, my large TV Studio, fundraising and writing curriculum, I was in no place to have perspective, and had little mental capacity to wrestle with the challenge of teaching about sound to a student who couldn't even perceive sound.

We muddled along, completed projects by going through the motions and the student left when the class was over at the semester. I figured I'd never have those same concerns again.

Fast-forward 15 years and I walked into class and found not one, but four deaf and hard of hearing students in my Cinema 1 class. In the time since my first experience

a lot had changed, but I couldn't have anticipated the learning that would happen over the course of the next year, both for my students and for me as an educator.

Immediately, Cyndy Parral and Diana Tupua, the two Deaf or Hard of Hearing (DHH) support staff who accompanied my students, approached me. They were eager to work with me as a team, defer to me as instructional lead and help all of us adapt to suit the needs of the DHH kids. Ultimately, they not only translated for my students, but they also acted as my cultural translators, explaining the history and politics behind the DHH world, and the challenges my students face in their daily lives. Far beyond their official capacity as translators, they were two of the best professional development facilitators I've ever had.

CHALLENGES OF TEACHING CINEMATIC ARTS TO DEAF STUDENTS

I faced three main obstacles when teaching my students to be filmmakers: watching and critiquing movies; producing movies; collaborating with a crew to produce their projects. Each of these proved to have a unique set of challenges for which Cyndy, Diana and I developed solutions.

LEARNING HOW TO WATCH A FILM

The first of these was simply learning how to watch movies with DHH students in mind. I learned there are two styles of closed captioning: one with just dialogue and another called SDH, which also describes details on the soundtrack. Cyndy and Diana checked all of my DVDs to determine which ones had SDH so that I could use it if it was available.

Cyndy rigged an iPad with it's forward facing camera pointed at the screen so that she could watch the film and also face the students when she signed.

The history and film analysis part of the course relies on watching films to analyze technical, thematic and artistic elements of the text. Since half of a movie is sound and all of the cultural and artistic nuance and connotations surrounding it, we had to find ways to share this content and experience.

For my unit on sound design, I screen the Francis Coppola film "The Conversation." It's a film whose plot hinges entirely on the inflection of a single phrase of dialogue, a detail that is completely reliant upon sound. Even my hearing students struggled with perceiving this nuance, and it became a great point of discussion for the class: even though our ears function properly in a technical capacity, our

minds distort and filter those sounds, and we often hear what we want to hear, a sort of psychological disability based on culture, stereotype and experience.

EDITING TO THE BEAT

Diana, Cyndy and I were adamant that the DHH kids would complete the same projects as the hearing students. This included two projects that used sound: a foley project where teams record and mix sound for a scene from a film, and a music video where students edit video clips to the beat of music.

My DHH kids used the visual audiometer to see the sound levels as they recorded, and used waveforms in editing to match the rhythm of sound patterns in the movie. But the most challenging part of the process was when the students had to conceive the sound design, imagining how to use sounds creatively, and how an audience of hearing students might perceive their soundtrack.

It was an exercise in creativity, empathy and design thinking: trying to imagine how someone else would react to your work, and how to make a product for someone with different needs than yourself. Frank Gehry once gave a challenge to his architecture students at USC: to design a home for zombies. The bound-ary-breaking exercise forced students to forget what they knew about designing for people like themselves, and use research and empathy to ideate a space that met the needs of an end user, a technique that comes in similarly handy when designing accessible spaces for people with disabilities.

I had been so caught up in my routine of teaching the technical elements of sound design, I hadn't even considered giving all of my students this type of creative challenge. Afterall, EVERY audience member perceives the world uniquely, and my DHH students helped me see the artistic potential in this approach, which led me to modify the assignment for all of my students.

For the music video project, one where the precision of timing and editing on the beat is everything, my students relied on a couple of techniques. First, we used a song with a strong beat, one that had clear spikes in the audio waveform. These spikes were visual markers that help the students align video clips--some lasting only fractions of a second--to the music, which created the desired staccatto editing effect. They also touched the speaker to find beats, and audio within the video clips which was part of the assignment.

Both projects surprised their hearing classmates. The identity of each project was hidden until right after we screened the project in class. The music video in particular was stunning, and when the rest of the class found out that my DHH kids made that edit, their jaws hit the floor. The work was on par with their own, and imagining the challenges they faced creating the project earned them substantial respect.

WHAT I WISH I'D BEEN ABLE TO DO

These were two highlights of their success. Yet not every challenge we faced together was resolved as successfully, specifically collaboration and time management.

Originally, I wanted to mix the DHH students in teams with their hearing peers as a way to better integrate them and let everyone get to know one another better. With only two support staff, it was impossible to have them translate during group work for four separate teams simultaneously. This was especially true for the assignments where students shot footage after school and the weekends, when the DHH support staff were unavailable.

The other challenge was speed at which the DHH students worked. American Sign Language (ASL) is vague compared to spoken language, and it relies on facial expression and both hands to communicate. Imagine holding a video camera in both hands while trying to sign with teammates and actors. Everything stops when talking is happening.

The lack of signs for film-related jargon and concepts also slowed down their process, and it meant relying on Cyndy, Diana and myself to create new explanations and definitions for many terms throughout each step of a project and lesson.

WHAT MY DHH KIDS TAUGHT ME ABOUT BEING A BETTER TEACHER

Good teaching is good teaching. What's good for my DHH kids is just as good for my able-bodied kids. For example, repeating, reviewing and reinforcing concepts by watching projects more than once can only help all students absorb information and look for details. The first pass was for dialogue and story, the second pass was for creative techniques like camera angles, editing and sound design.

Closed captioning. I use flipped classroom videos instead of lectures, and closed captioning them was a new experience. Although I'm still working on this, it's becoming ubiquitous for videos that appear on social media. When we're at work or a public space and want to watch a video, having the sound muted and onscreen dialogue or narration as text helps us watch and understand privately. It actually helps my hearing students too, since they can learn by both seeing **and** hearing the information, and also see the correct spelling of vocabulary words (some students don't hear my spoken voice over well and misidentify some words).

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Through this experience, I really came to terms with the fact that what I teach doesn't matter. The **process** of learning is paramount to any content we can provide students, because the growth that each student makes and the confidence that builds in them will help overcome difficulties later in school and life, and prepares them to be independent learners. I was stuck in an arrogant way on **my** content as the most important part of a class. I now truly understand that a class isn't about being teacher-centered, but instead student-centered.

Maintaining the same high expectations of students with disabilities not only forces them to find their own inner strength and self-worth to complete projects, it lets them know that I respect them enough to do so, that I believe in them and their abilities. Of course this applies to all of my students, since each of us has our own strengths and weaknesses, and our own reasons as to why we think we can or can't succeed.

TAKEAWAYS FOR GENERAL EDUCATION TEACHERS

I wasn't bound by standardized tests or other external forms of evaluation, I had the flexibility to adapt and change how I teach very easily. Ultimately, all of us need to make the time to change and adapt. Our purpose is to do our best to bring children up, encourage and respect them by holding them to high standards. What I thought was an important reason to not change and improve turned out to be more of an excuse based on my arrogance.

There is no "standard" student, and deep down we know this. Some are smart, some are shy, some are performers and not good test takers. Then let's include students with disabilities on an expanded student ability spectrum, and do the best we can to help all of those kids.

One of the hardest things for teachers to learn is how to learn. We suffer the burden of inertia, and it's hard to change course. Our payoff is knowing that we make a difference in a student's life. There is no better reason to adapt our teaching methods than to know one of your students achieved something they never thought they could do. ∎

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ASI is happy to announce that we have completely upgraded our entire line of software and computer interfaces for persons who need single-switch solutions to access modern computers, including:

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FREE Webinar Sponsored By Saltillo Corporation
WEDNESDAY, OCTOBER 4, 2017
2:00 PM - 3:30 PM CDT

This webinar will present research-based techniques and strategies to increase communication for individuals using a speech generating device (SGD) via communication partner education. Participants will learn about communication and communication characteristics common to both partners, how to increase communication by modifying their own behaviors, six techniques to incorporate into everyday communicative contexts, and two strategies to use within a shared book reading context.

The webinar will provide foundational information for various communication partners (e.g., parents, teachers, classmates) to encourage positive behavior change and impact language learning and use for individuals using AAC. The presented techniques and strategies are evidence-based and easily implementable across settings and communication partners for generalization.

MELISSA MALANI

The BEST Web-based Resources for Professionals Working with Students with ASD
TUESDAY, NOVEMBER 14, 2017
3:30 PM - 5:00 PM CST

This fast-paced webinar will give participants a wealth of web-based resources to assist professionals in better understanding and programming to meet the unique learning and behavioral needs of students with ASD. Various websites will be explored, starting with evidence-based practices identified by the National Professional Development Center on Autism Spectrum Disorder.

Numerous free web-based resources that highlight instructional tools, strategies, and behavioral interventions for students with ASD will be shared, as well as resources designed to increase understanding of the distinct neurological learning differences of students with ASD for professional development and peer awarenessd.

SUSAN STOKES

Adapting and Creating Classroom Content using Free Open Educational Resources (OER)
MONDAY, NOVEMBER 27, 2017
3:00 PM - 4:30 PM CST

OER and copyright free materials can help supplement and reduce costs, and provide educators with free resources for differentiating classroom learning activities. Learn how to adapt and/or integrate free OER curriculum content and resources into the classroom learning environment. Including, copyright free images, online interactive learning activities, eBooks, teaching videos, podcasts and more!

Use digital pens as the new "blackboard" to record your lesson while teaching. Broadcast to the board from anywhere in the room, pause recording at any time, then save and post your lessons as online videos to programs such as Symbaloo, Padlet. Numerous homework supports and resources will be shared.

Create an engaging and supportive learning environment following from device to device for all students.

DAN HERLIHY

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By Diana Petschauer

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By Brian Whitmer and Scot Wahlquist

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By Pati King DeBaun

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Introducing Unity 2.0: Implementing AAC Just Got Easier
BY SARAH WILDS, KARA BIDSTRUP
RECORDED: MAY 24, 2017

Why Single Words?

go ...   vs.   Let's go to the park.

- Easier to learn – pairing a motor act with an auditory output followed by a meaningful natural response
- Provide flexibility in expression (*generative language*)
- 20 phrases… only 20 things to say

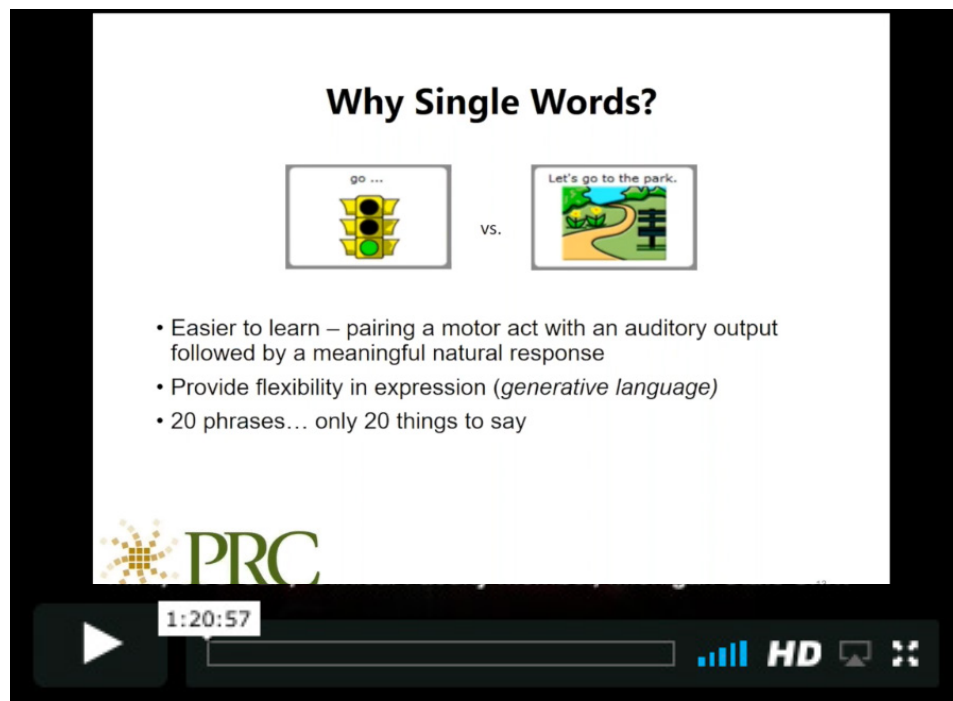PRC

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Website Accessibility for K-12 Public Schools

Stop and think for a minute. As you are reading this article, how many things have you done online so far today? If you're like me, and I like to think that I'm an average person, I've already checked the weather forecast, communicated with friends and colleagues via email, added work and pleasure items to my calendar, perused the news, and made sure that I haven't spent all the money in my bank account - and it's only lunch time. It is no secret that more and more of our daily lives and routines are spent online on computers and mobile devices completing tasks through websites and digital tools that make tasks more convenient and information more accessible.

For individuals with disabilities however, access to digital tools and information through websites can frequently be a more challenging avenue if the content of these pages and documents lack features to make them work in harmony with various assistive technologies. This can be a problem for businesses and organizations that rely on their website presence to disseminate information and manage communication with their customers and their communities, particularly those in the gov-

Image 1 - So much information can be found on school webpages today. If the page is inaccessible to a user who uses assistive technology to access content online, we are creating barriers for individuals with disabilities.

ernment or public sector - including public schools. Take a look at this public school division's homepage. (See Image 1) Just on this one page we find links to the lunch menu, bus routes, the school calendar and more. It is a tremendous resource for families in this community to have all of this information in one place, accessible with the

MATT NEWTON, serves as the coordinator of assistive and educational technology for the Virginia Department of Education's Training and Technical Assistance Center (T/TAC) at Virginia Tech. His focus is supporting general and special education teachers, administrators, and therapists in finding and implementing low- to high-tech solutions and strategies for K-12 students with disabilities. Matt began his career in education as a special education teacher working with students with multiple disabilities in the Roanoke City Public Schools division and has also served there as an instructional technology resource teacher. He was recognized as Roanoke City's Teacher of the Year in 2014 and Virginia's Region 6 Teacher of the Year in 2015.

Matt received a master's degree in special education from Liberty University and an adapted curriculum endorsement following coursework at Radford University. He is currently pursuing a graduate degree in assistive technology through George Mason University. Matt is also a certified Assistive Technology Professional by the Rehabilitation Engineering and Assistive Technology Society of North America (RESNA). He can be reached at matthewn@vt.edu.

click of a mouse or touch of a finger. How can school divisions (and even teachers creating classroom webpages) make sure that users accessing their Web content using screen readers and other alternate interfaces are able to do so in an equally effective manner? It might be easier than you think. Let's start from the beginning by describing what Web accessibility is and building up from that foundation.

WEB ACCESSIBILITY - WHAT IS IT?

When we discuss Web "accessibility", what do we mean? Web accessibility encompasses the features of web page authoring software and document creation tools like Microsoft Word that allow people with disabilities to access, navigate, and interact with all the content present on your webpage through alternate manners, as well as assistive technologies. This includes individuals with visual, auditory, motor, and/or cognitive disabilities whether chronic or temporary due to illness or injury. The World Wide Web Consortium's (W3C) Web Accessibility Guidelines (WCAG 2.0) are organized around four principles of accessibility (https://goo.gl/h4dzR4). The first letters of each of these four principles form the acronym "POUR". They assert that anyone who wants to use the Web must have content that is:

1. Perceivable: Users must be able to perceive the information being presented with at least one of their senses.
2. Operable: Interface components and navigation of the page must not require an interaction the user cannot perform.
3. Understandable: Information and operation of the user interface must be understandable.
4. Robust: Content should be able to be interpreted reliably by a variety of user agents, including assistive technologies.

If your website does not meet each of these four principles, it is likely that many users with disabilities will not be able to access your page. So, as a division webmaster or classroom teacher managing your own 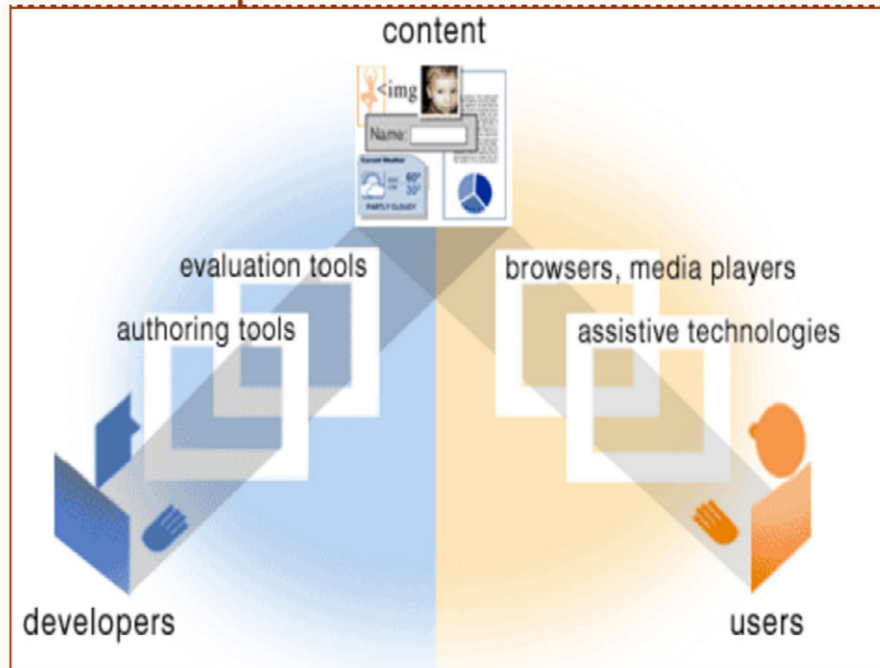page, it is up to you to make sure that you address each of these principles when creating your page(s) and uploading content to them if you desire to create an accessible environment for student users with disabilities.

It sounds like a lot, but often can be addressed utilizing tools that you are likely already familiar with. So hang in there! It is often easier and less time consuming (and less costly) to create new webpages and webpage content with appropriate accessibility features than to go back and correct errors in existing sites, especially large ones. So I would encourage you if you are concerned with the accessibility of your webpage(s) and content, to make sure that your new creations are "born" accessible, without any of the common errors that we will identify next. Don't wait for complaints to take action! (See Image 2).

COMMON WEB ACCESSIBILITY ERRORS ON SCHOOL WEBPAGES

OK, we've been discussing website accessibility in very general terms so far, let's now get down to some specifics about dig-

w3.org/WAI/intro/components.php
Image by Michael Duffy, from:
Essential Components of Web Accessibility. S.L. Henry, ed.
Copyright W3C

Build accessibility into your Web development process! New digital content should be "born" accessible!
-Don't wait for complaints to evaluate
-You will save time and money in the long run

Image 2 - Web developers with their authoring and evaluation tools meet users through their assistive technology and web browser software at your website.

Image 3 - Depending on the presence of alt-text tags included with this picture when published in a document or on a webpage, a user with assistive technology may or not be able to connect with the information it conveys.

ital barriers that can make a webpage or its content inaccessible. According to the U.S. Department of Education's Office of Civil Rights (https://goo.gl/f1Zvd3), the most common complaints received around a school's website were related to these five accessibility categories:

1.   Missing "alt-tags" describing images for blind and low vision users who utilize screen reading software. Alt-tags provide text descriptions of images and graphics that allow users of screen reader assistive technology softwares to receive the information conveyed by the image or graphic in an equivalent way to that a sighted user would. Take a look at this image: (See Image 3). With a proper alt-text tag, a user of screen reading assistive technology would hear something like "A picture of a young George Washington standing. His right hand is tucked into his red vest as he gazes into the distance" when

arriving at this content on your page or document. Without the alt-tag, the user of screen reading assistive technology would likely hear "Washington_1772.jpeg" at best (many image files have longer, much more obnoxious filenames or URLs). A short, effective video of missing alt-text behavior with a screen reader can be viewed at https://goo.gl/AzT3Wp. You can see how critical this error can be to the accessibility of your website and content. It should be noted that missing alt-text attributes is not an accessibility issue that is exclusive to public schools' webpages. The Web is replete with images that are missing alt-tags. You may find it interesting to visit one of your favorite pages and use one of the evaluation tools we will introduce later to see what I mean.

2.   Content inaccessible for users unable to use a mouse. Traditionally, web pages and documents were designed to be navigated with the point and click of a mouse cursor and more recently with the touch of a screen with a finger or stylus. These designs can be a trap for users who rely on keyboard navigation to move through items and make selections on a page in a proper sequence (usually with the Tab key and SpaceBar or Enter/Return). Widgets that display items such as calendars and photo slideshows creatively on pages can be particularly problematic, causing keyboard navigators to get stuck in them if they are not coded correctly. Again, I encourage you to visit a few of your favorite webpages and try to navigate through the items displayed using only the Tab button on your keyboard (and Shift+Tab to move backwards) and the Enter button to select. Does it work at all? Did you get stuck anywhere? Even when keyboard navigation works 100% successfully, you probably noticed that it takes some time to get to items lower on your screen that if you used the mouse. This

knowledge should inform your future web page designs, encouraging the placement of important or frequently used items in places that can be more quickly accessed. Utah State University's Center for Persons with Disabilities WebAIM service provides an excellent description of keyboard navigation accessibility issues, as well as resources to address Web accessibility challenges in general at webaim.org.

3.   Inaccessible color combinations for textual information. My 2-year-old daughter loves the colors pink and yellow. This probably has lot to do with the fact that those are the colors of her favorite frozen yogurt flavors at a local shop that we frequent and can be found in the outfits of most Disney princesses. However, while pink and yellow may make a great combination in your yogurt bowl (with sprinkles), it is a terrible color combination for presenting textual information online or in a document. (See Image 4) I would assert that this accessibility barrier may be the one that is the most familiar to individuals without disabilities. Most of us have encountered a web page or document where the creator, with the best of intentions, has used school colors or someone's favorite colors to design a document that is illegible or takes a lot of squinting and focus for even those with young, sharp eyes to decipher. Inaccessible color combinations displaying text can be a complete barrier to individuals with age-related or other visual disabilities. WCAG 2.0's guidelines require that online text have a color contrast of 4.5:1 except for large-scale text (which is 3:1), decorative or incidental text that does not convey important information, and logos or brand names (https://goo.gl/Jck3wa). Although inaccessible text color contrast is inherently a concern for individuals with visual disabilities, I think that it is interesting to consider that viewers with the most significant visual impairment

This is an example of textual information presented with inaccessible color contrast.

Image 4 - This is an example of text that is inaccessible due to its color contrast.

who use screen reading assistive technology to access web page and document text will be unaffected by poor color contrast choices with text. This is squarely an issue for those with mild to moderate visual impairments.

4.   *Uncaptioned or inaccurately captioned videos.* Having videos on school webpages allows members of the community to have a window into field trips, graduation ceremonies and student creations. Teachers implementing the "flipped" or "blended" instructional models in their classrooms may upload video to their class pages for students to view outside of classroom time. However, if you upload a video to your school webpage without including accurate, synchronized captions of the audio AND a transcript of the videos audio, you are creating an inaccessibility for individuals with hearing impairments. We are fortunate to live in the age of YouTube, where uploaded videos are automatically captioned, often inaccurately and often humorously, but these can be edited by the creator later. For more complex captioning needs, an individual familiar with creating subtitle files (.srt) may need to be enlisted. As for creating transcripts of videos to include, it can be done the old fashioned way: the teacher or administrator listening to the video and typing out the dialogue, or a free short cut might be to use a free speech to text program such as the one provided here https://speech-to-text-demo.mybluemix.net/, powered by IBM's "Watson" of Jeopardy fame. Again, transcription using this method is likely not be 100% accurate, but the bulk should be correct leaving the transcriber only the corrections to make.

5.   *Inaccessible documents.* This may very well be the biggest headache for those seeking to either clean up the accessibility issues present on their school or organization's website or maintaining it. The website's structure and pages often make up only a small percentage of what must be monitored for accessibility and with contemporary Web authoring software many accessibility features are already built into the website itself. Overall website design and publication is also usually handled by a few employees in schools and organizations as well, making it easier to manage. It is a different story though when we look at the documents (Word, .pdfs, etc.) shared through school web pages, which often make up the vast majority of a website's content, can be uploaded by a wide variety of people (teachers, therapists, administrators) and can have a long list of accessibility issues of their own.

A great resource for those interested in seeing and experiencing first hand the accessibility issues listed here in an online environment should visit the University of Washington's fictitious "Accessible Univer-

Image 5 - The University of Washington's fictitious "Accessible University" webpage illustrates accessibility issues that can plague a website.

sity" webpage at https://www.washington.edu/accesscomputing/AU/. This resource provides link to three different pages: a fictitious university homepage that demonstrates a number of common Web accessibility issues, a listing of all of the accessibility issues present on the page, and a modified version of the fictitious homepage, with all of the accessibility issues corrected. (See Image 5)

SO HOW CAN WE EVALUATE OUR WEBSITE FOR ACCESSIBILITY ISSUES?

Fortunately for those intrepid souls who are charged with checking and correcting the existing accessibility issues in their school division's webpages, there are many tools available to help you - both free and commercial. Which is right for you? WebAIM (webaim.org) suggests that you go through a thoughtful process when selecting a website accessibility evaluation tool to use, considering:

1. *The standards/guidelines the tools uses.* Some evaluation tools are based on the standards laid out in Section 508 of the Rehabilitation Act which applies to Federal Government websites. I would recommend that public schools apply the standards found in WCAG 2.0 (AA) when evaluating their site.
2. *Who will be using the tool?* If an experienced IT professional is charged with evaluating and correcting accessibility issues within your website, utilizing a free tools may be all that you need. If you school's media center coordinator or librarian, a teacher, or other webmaster with less of a background in web design is doing the evaluation, the support provided by some of the paid evaluation tools might be useful.
3. *What is the size of the site to be examined?* Many of the free accessibility evaluation tools out there do a good job of finding barriers for individuals with disabilities in web pages. However, they do it one...page...at...a...time. So, if you are in a smaller school or division with a website with just a few pages, a free tool may be for you. For those

larger school systems or those with many hundreds or thousands of pages on their site, using a paid tool that can scan your entire site at once may be the route you want to take.

4. *How is the information collected reported?* If you desire or require robust reports that you can print detailing the accessibility barriers on your website, a paid evaluation tool may be for you. If only seeing flags or markers where errors occur on the page while you are actually evaluating it is sufficient, many of the free tools can be your choice.
5. *Do you want evaluation only or evaluation AND repair?* You can probably guess that free tools will tell you where the accessibility barriers are in your website, but won't fix them for you. Many commercial tools will find and repair accessibility barriers automatically.

Here are a few evaluation tools that I have had experience with that I would recommend that you explore. I suggest you plug your school or favorite website into one of the free options to get an idea of how they work:

FREE TOOLS

- *ACChecker* https://achecker.ca/checker/index.php Great site that allows you to enter a URL to check or upload an HTML. File. Lays results out nicely against WCAG 2.0 AA standards so you can see what you need to change to meet them.
- *WAVE* http://wave.webaim.org/ This is WebAIM's free online accessibility checker. It is also available as a Google Chrome extension. WAVE marks up the page itself so you can see where the accessibility barriers are. (See Image 6)
- *aXe* https://www.deque.com/products/axe/ Another Chrome extension, aXe is an accessibility tool for the more "techie" out there. aXe scans and shows you the actual code behind your page for accessibility issues and alerts you to the standards you may be violating (either WCAG 2.0 or Section 508).
- *WebAIM's Color Contrast Checker* http://webaim.org/resources/contrastchecker/ Plug your color palette choice in here (as

well as your text size) and this tool will compare it to the WCAG 2.0 AA and AAA standards.

PAID TOOLS

- *WEBAim* www.webaim.org This leader in website accessibility knowledge and training has expert staff that will evaluate your website and consult with you on it correction.
- *Deque* https://www.deque.com/services/ Deque will tailor assessments to meet your needs and will even evaluate the accessibility of your mobile applications.

In closing your consideration of accessibility evaluation tools I want to emphasize to you that while there are many resources out there, there really is no substitution for an actual human being who utilizes assistive technology checking the accessibility of your website. For example, before you decide that your website is accessible for screen reading software users, because your evaluation tool or service said so, have an individual who uses this assistive technology check it for you! If you don't have access to a screen reader software user, then find someone proficient in using the software (or make yourself proficient) to check your site before you publish it.

CREATING NEW ACCESSIBLE CONTENT

OK, so now you've got your website cleaned up, how can you keep it accessible going forward? By creating, uploading, and publishing only content that has been "born" accessible. Fortunately, this can be done utilizing tools that many of us are already familiar with.

- *Missing alt-text tags.* The most common accessibility barrier found on the web can be easily corrected. Most website authoring softwares allow you to add alt-text to any image you directly upload (some force you too) and images uploaded into documents like those created using Microsoft Word can have alt-text tags added to them through the format picture menu. These tags will transfer over if the
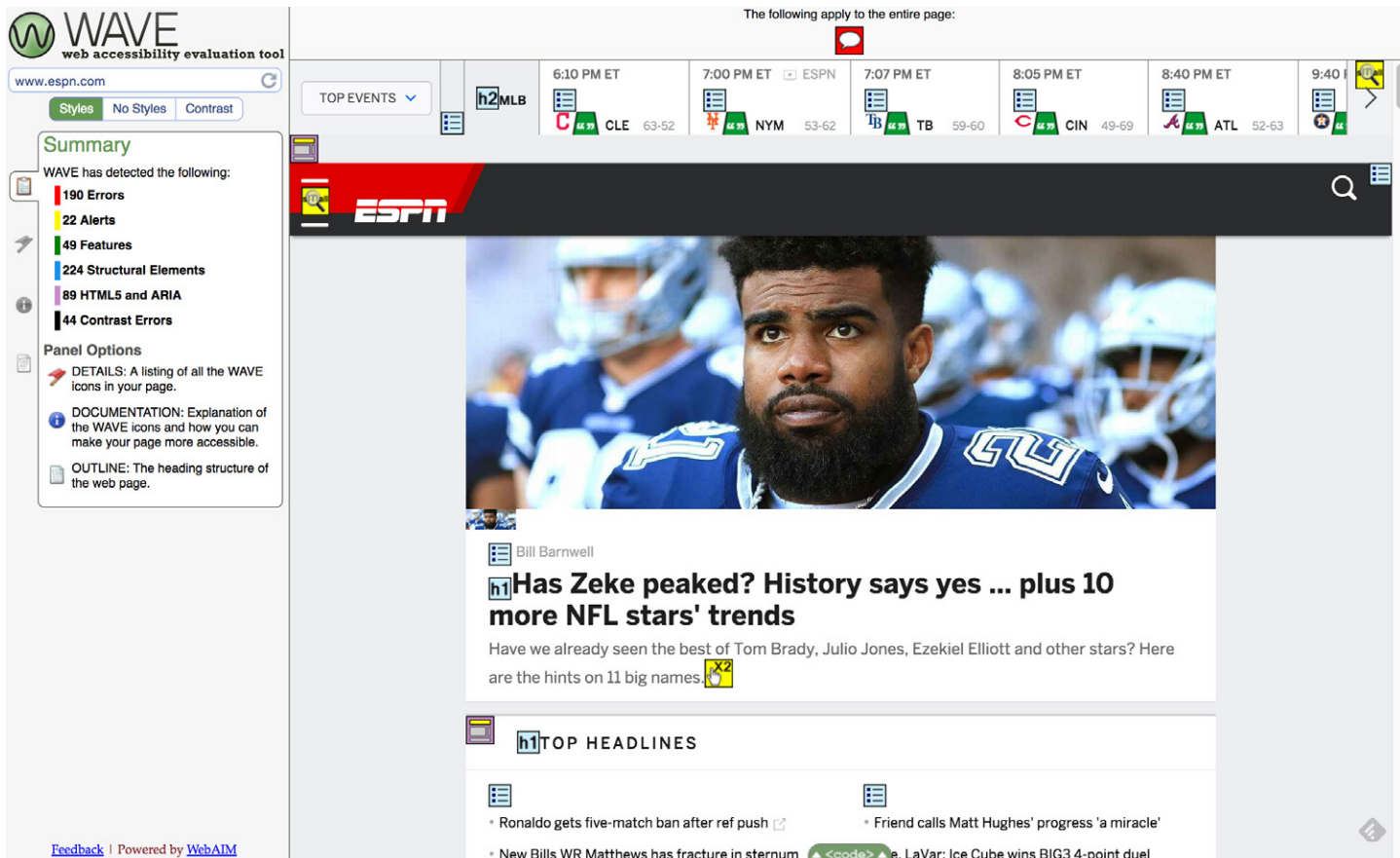
Image 6 - Website evaluation tools like WebAIM's free WAVE tool seen here, will identify accessibility errors on a webpage that need to be corrected based upon standards like WCAG 2.0.

.docx file is saved as a .pdf as well. When including alt-text with a image or photo, think Twitter. Keep your descriptions concise, but include the context of the image. Decorative images on pages that do not convey information do not require alt-text tags.

- **Video/Multimedia Captioning & Transcripts.** Make sure that any video that you post with audio includes accurate, synchronous captioning and a text-based transcript. This can be made more efficient by uploading videos to YouTube to have automatic captions added (and then edited) and having the transcript written by a speech to text program of your choice (and then edited). Other captioning options, as well as other trick and tips in website accessibility, can be found at Penn State University's accessibility and usability page: http://accessibility.psu.edu/.

- **Make links meaningful.** Avoid links such as "click here" or "more more infor-

mation". Especially avoid posting links in full URL form like: www.abcefg.com/eaklfew98234/~aoirg?ioagv93. Screen reader users can scan through pages and documents by link and coming across link language such as these can be confusing. Try to make your links indicate their destination. For example "School Menu" or "Bus Schedule" would be good hyperlink text.

- **Creating accessible documents.** Documents make up a large portion of the content on many school divisions' websites. Modern word processing programs, like MS Word, make it extremely easy to make your documents accessible. Word has a built-in accessibility checker under the "Review" tab on your toolbar/ribbon that will alert you to accessibility errors in your documents, tell you why these errors should be fixed, and even gives you the steps you need to fix them. How easy is that! If you want to cut down on the number of accessibility errors the

finder locates in your documents in the future, try to:
  - Remember to add alt-text to images by right clicking the image and selecting "picture format" (You should add alt-text to tables as well)
  - Use the built-in heading styles to organize your page text to aid navigation.
  - Use the bullet or number buttons in the toolbar ribbon rather than adding them yourself in the body of the text.
  - Use accessible text fonts, sizes, and colors.
  - Use table headers when you create charts and tables.

It should be noted that some school divisions contract with and utilize outside content managed systems and learning management systems to publish their websites and online instructional environments. When you utilize one of these systems, you give up some of the control you have over the accessibility of your website. Many CMS

and LMS systems have accessibility features built-in and this should be consideration when choosing a service for your school or division.

Also, for the more techie among us, the use of Cascading Style Sheets (CSS) in the design of webpages can be used to make page structure, content, and presentation interact with assistive technology tools such as screen reader software in a more efficient manner. More information on the accessibility features of CSS can be found at the website of the Texas School for the Blind and Visually Impaired at: http://www.tsbvi.edu/resources/49/1149-css-accessibility.

GO FORTH AND BREAK DOWN BARRIERS!

Now that I have you fired up to wrestle your website into accessibility submission, let me push you out of the nest with a few resources that I hope will help you get organized, make a plan, and help you get past those first barriers that will pop up to discourage you:

- *W3C's Planning & Managing Website Accessibility Guide* https://www.w3.org/WAI/impl/Overview This guide will help you as an individual website creator, or as an organization, initiate, plan, implement, and sustain your more toward website accessibility for individuals with disabilities.
- *Web Accessibility First Aid* https://www.w3.org/WAI/impl/improving Do you have urgent issues that need to be fixed now, while you are developing a longer term plan for sustained website accessibility? This is the guide to help you put out those first hot fires.
- *WebAIM* http://www.webaim.org This project of Utah State University's Center for Persons with Disabilities has many free (and paid) resources that can help you understand the principles of Web accessibility and get your website in shape.
- *How to meet WCAG 2.0* https://www.w3.org/WAI/WCAG20/quickref/ This customizable guide introduces you to the WCAG 2.0 standards. It describes example successes and failures for meeting each level.
- *WCAG 2.0 Checklist* https://goo.gl/Y3K-

Tjm This handy checklist will help you evaluate where you website is, so you can map where you are going.

Evaluating, correcting, and creating content for websites is more than just being in compliance with a set of standards. It's about making the World Wide Web truly connect all of us, not just some of us. ■

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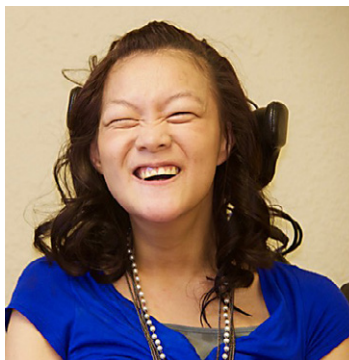
✔ **THREE DAYS OF PRESENTATIONS AND HANDS-ON LAB OPPORTUNITIES** Sessions describing and/or demonstrating successful strategies and practical applications of assistive technology for persons of all ages with disabilities

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Conference - Wednesday, Thursday, Friday, October 18-20, 2017 Includes Preview of Exhibits – Tuesday Evening, October 17 AND Continental Breakfast Wednesday and Thursday, October 18 & 19

Registration Received	On or Before June 30	July 1 - September 7	September 8 - October 5	October 6 - Onsite
Standard Rate **Group Discount - 5 or more** **Group Discount - 8 or more** *All group registrations must be received at the same time.*	**$470** Groups 5+ Deduct $30 Groups 8+ Deduct $50 Groups 20+ Deduct $70	**$520** Groups 5+ Deduct $30 Groups 8+ Deduct $50 Groups 20+ Deduct $70	**$545** Groups 5+ Deduct $30 Groups 8+ Deduct $50 Groups 20+ Deduct $70	**$570** Groups 5+ Deduct $30 Groups 8+ Deduct $50 Groups 20+ Deduct $70
Parent Rate *(A letter describing your child's disability must accompany registration)*			**$290**	
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Presenter Rate	**$365**		**$415**	
Exhibitor Rate	**$365**		**$415**	

Single-Day and Exhibit Hall Only Registration	Price
Thursday Only - October 19	**$290**
Friday Only - October 20	**$125**
Exhibit Hall Only - Tuesday evening through Friday, October 17-20	**$125**

Preconference Workshops - Monday and Tuesday, October 16-17, 2017 Includes Preview of Exhibits – Tuesday Evening, October 17	Price
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product spotlight

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There Is No Limit Where The Stylus Can Take You

The Limitless Stylus isn't just an ordinary stylus. It is optimized for users with limited hand mobility and is a simple design that wraps around the users wrist with two Velcro straps. The stylus is angled perfectly to fit the contours of the user's hand and has been designed for long term use and optimal comfort. It can be used on any touchscreen device to gain more control and precision with every click!The Limitless Stylus is extremely light weight and durable which makes it easy to use on a daily basis without even thinking about it. After using the Limitless Stylus you will be unable to live without it.

HOW IS IT MADE

Limitless Stylus is made with pride in the USA. Every Limitless Stylus is 3-D printed in-house . None of the work is outsourced in order to achieve the best finished product. Paul, founder of Limitless Stylus, personally oversees the entire production process from start to finish, ensuring that no detail is overlooked.

FEATURES

1) Light weight, non-invasive design

2) Allows for two straps to be used for added stability

3) Tip contours down for better control and precision

4) Stylus tips and straps replaceable at any point

Dolphin – On their 30th Anniversary, They've Released Free Version of EasyReader!
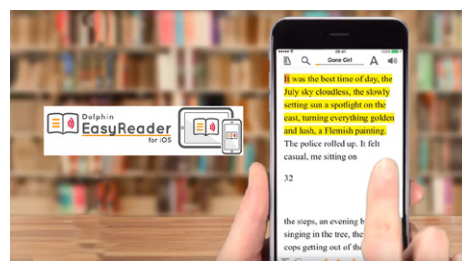
ABOUT

Accessible reading app for dyslexia, low vision & blindness

A BETTER WAY TO READ!

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Read with your ears & eyes with perfectly synchronised text & audio

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BACK TO CONTENTS

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Organisation looking to develop your own accessible reading app?

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100,000s of audio book instantly accessible. Login to your favourite library, browse and get reading. Book or title with no inbuilt narration? No problem – add speech with a range of natural sysnthesiers to choose from.

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Dyslexia friendly fonts & colours

Change your book's text to a font and colour that works for you. Or choose a preset scheme. Boost the text size and line spacing. Add a synchronised highlight that follows as EasyReader reads aloud.

Total control

Just like other any other audio app, EasyReader puts you in total control. Rewind. Pause. Slow the book reading speed to a pace that suits you. Choose headphones or read loud and proud!

Proven 71% improvement in reading!

Reading to learn? The Accessible Resources Pilot found that 71% of dyslexic students improved with their reading, thanks to synchronised text and audio book access.

LEARN MORE

The Blind Can Experience the Eclipse with Eclipse Soundscapes App!

On August 21, 2017, millions of people will view a total solar eclipse as it passes through the United States. However, for the visually impaired, or others who are unable to see the eclipse with their own eyes, the Eclipse Soundscapes Project delivers a multisensory experience of this exciting celestial event. The project, from NASA's Heliophysics Education Consortium, will include audio descriptions of the eclipse in real time, recordings of the changing environmental sounds during the eclipse, and an interactive "rumble map" app that will allow users to visualize the eclipse through touch.

PROJECT ORIGINS

The idea for Eclipse Soundscapes came from Dr. Henry "Trae" Winter, a solar astrophysicist at the Harvard-Smithsonian CfA with a penchant for scientific engagement projects. Winter noticed a deficit in accessibility while building a solar wall exhibits for museums. He observed that some "accessible" exhibits merely included the item's name in braille, while other exhibits — including his own — had no accessibility component at all. Winter began to brainstorm an astrophysics project that would use a multisensory approach to engage a larger percentage of the population, including the visually impaired community. The "Great American Eclipse" of August 2017 seemed like the perfect opportunity.

HEAR TOTALITY

For individuals who cannot see, hearing is an ideal way to experience the eclipse, since soundscapes change dramatically as the Moon passes between the Earth and Sun. Due to the change in light, nocturnal animals stir into action, while diurnal animals settle. As the Sun's light re-emerges, it often triggers a "false dawn chorus."

Eclipse Soundscapes is working with organizations such as the National Park Service (NPS), Science Friday, and Brigham Young University, Idaho, to record these auditory fluctuations. Many of these recordings will use microphone arrays that simulate human hearing, creating a sensation of 3D sound for listeners.

Of course, these recordings will not be available until after the eclipse, but visually impaired individuals can enjoy the August 21 event with the Eclipse Soundscapes app, which will include a narration of the eclipse's progression in real time using specialized imagery

description techniques developed by WGBH's National Center for Accessible Media (NCAM). Eclipse Soundscapes' app will geolocate the user and start the narration to align with the planetary movements as they occur.

TOUCH THE SUN

The Eclipse Soundscapes' app also features an interactive "rumble map," which uses a smartphone's touch screen and vibrational feedback to demonstrate the physical qualities of an eclipse. The rumble map displays photos of the eclipse at various stages. When users touch the image, the app reads the greyscale value of a pixel underneath their finger, and vibrates the phone with a strength relative to the brightness of the section. As users move their fingers around the Sun, their smartphone will vibrate more. As they move their fingers into the dark spaces blocked by the Moon, the vibration will diminish and disappear.

BEYOND AUGUST

With these tools, the Eclipse Soundscapes team hopes to provide visually impaired individuals with a variety of resources to explore the eclipse on their own — and maybe even learn something that their sighted peers could not through visuals alone.

Although the August 21 eclipse will only last for a few hours from beginning to end, the information collected through the Eclipse Soundscapes app will live on as an open source primary documentation of this historic event, and as a model for making science accessible for all. The team aims to continue their efforts for upcoming total solar eclipses, including one in Chile in 2019, and another that will visit the central United States in April 2024.

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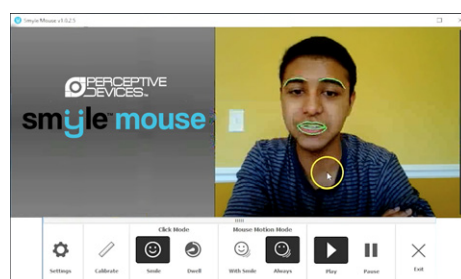
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Nike's Revolutionary FlyEase Designed for Athletes of All Abilities and Ages.

Nike is taking steps toward increased accessibility with a new shoe designed to make it even easier for people with disabilities to slip their feet in and out.

The athletic-wear giant said this week that it's introducing a new iteration of its FlyEase lineup, a collection of sneakers that include special accessibility features.

Nike first introduced FlyEase in 2015 after hearing from a teenager with cerebral palsy who sought a shoe he could put on independently. The original FlyEase design relied on a wrap-around zipper to fasten the shoe and included a larger opening at the back to make it simpler to slide feet in and out.

"One of the key learnings we've had in crafting accessible footwear is the importance of easy entry and exit of the shoe, not just simplifying its fastening system," said Tobie Hatfield, senior director of athlete innovation at Nike. "Eliminating the intricate hand movement of lace tying is important, but if the athlete cannot get their foot into the shoe, lacing becomes a moot point."

The new version — called the LeBron Soldier 10 FlyEase — opens from the heal to the midpoint and uses a flatter zipper and Velcro straps to secure the shoe around the foot.

"It looks just like the traditional Soldier 10, but with a far more generous opening for the foot," Hatfield said. "Of all the shoes we've ever made, this may be the easiest one to get into."

The LeBron Soldier 10 FlyEase is available online in both kids and adult sizes.

Thanks to a plea from a teen with cerebral palsy seeking shoes he could put on his feet independently, Nike is introducing sneakers designed specifically for people with disabilities.

Matthew Walzer, then 16, wrote an open letter to Nike in 2012 asking the athletic-wear giant to make a more accessible line of shoes that would still provide the support people like him need.

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