Assistive Technology Resources for Children and Adults with Disabilities

Closing The Gap

Solutions

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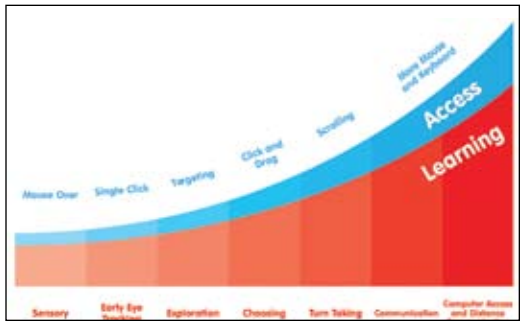

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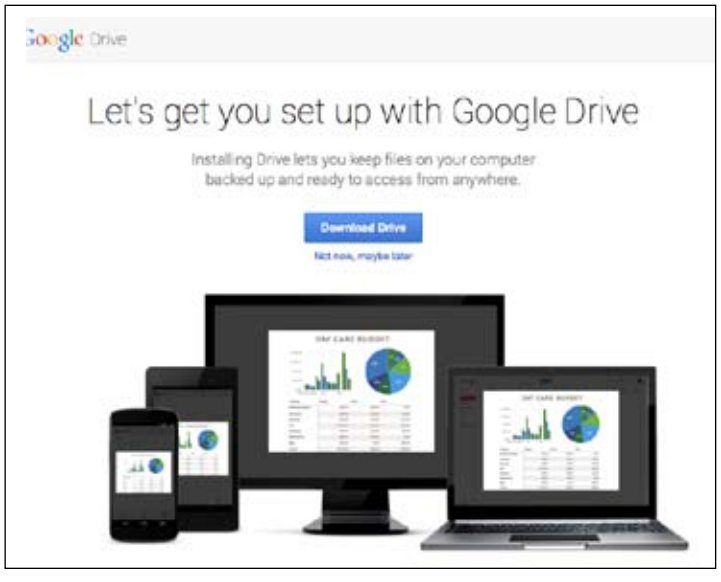
Speech-to-Text in Google Docs

Ever wish you could just speak your thoughts into a document instead of writing or typing them? Doing so may be easier than you think. Speech-to-text technology has been around for decades in one form or another. It was made popular by technology companies, such as IBM, the Department of Defense and medical offices. Over the last few years it has become increasingly more popular with the general public and much more accurate at deciphering what we are saying. This has positively impacted everyone, from commuters wanting to dial a number without looking at the keypad to individuals with disabilities needing to send an email.



In classroom settings, speech to text has been an often sought after, yet rarely used tool. This is partly due to the difficulty users had getting the software to understand their voice. For example, being able to use the software was highly dependent on students being able to read large quantities of text in order to train it. Younger students, or students with reading disabilities, struggled with this. In addition, effective use required a decent microphone, quiet space and, sometimes, sophisticated software being installed on the computer. Finding these three things together in a classroom setting did not happen often.

Fast forward to today where many schools have access to iPads, smartphones and other technologies that have excellent speech to text utilities built in. I've watched my 6-year-old daughter ask Siri (Apple's personal assistant)

JASON CARROLL,
Product Marketing Manager for North America, Texthelp, Inc.

a question on my iPhone, then see the written version of her question displayed on the screen, while Siri repeats it.

Recently, at a Google Summit, I saw someone demonstrate how easy it is to use speech to text on a phone to help type a document. I thought this was an excellent solution for those looking for an inexpensive (assuming a smartphone or tablet is available) and effective speech to text tool.

Here's how it works: Begin by creating a new Google Document. If you have not used Google Docs before, just go to drive.google.com and log in with your Google account (or create one if you do not have one). Click create – Document and you will see a blank document in front of you. Be sure to title the document so you can easily find it later.

Next, using your smartphone, either visit Google Drive through a Web browser or the mobile app and sign in. Find your document and open it. Simply click the microphone button available on most mobile keyboards and begin speaking. Once finished, your text will appear in the document. I have to admit that it is pretty cool to watch. When demonstrating this to others, I first open a Google Doc on my computer, then open the same doc on my phone. After speaking a sentence, it just magically shows up in the document on my screen. .■

FOLLOW THESE STEPS:

Image 1 - The Google Document open from my iPhone (see microphone button next to spacebar)

Image 2 - The screen that appears after clicking the microphone button on my keyboard

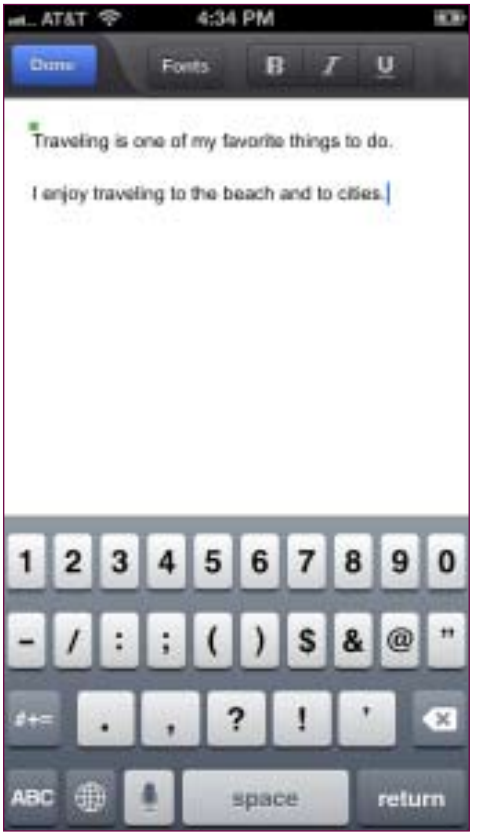


Image 3 - The inserted text after I clicked "Done"

Alphabet Soup:

Strategies for Autism Spectrum Disorders from A to Z

In March of 2014, The Autism and Developmental Disabilities Monitoring Network estimates that approximately one in 68 children have been identified with autism spectrum disorder (ASD). The prevalence numbers have increased by 30 percent in the last two years. Due to this ongoing increase, educators are more likely to work with individuals on the spectrum. There is a large body of literature that addresses research best practices when working with individuals diagnosed with ASD. This article contains 26 easy-to-implement strategies for parents, teachers and other professionals who work with individuals with autism. One tip is provided for every letter of the alphabet.

A: APPLIED BEHAVIOR ANALYSIS (ABA)

ABA is a systematic process of studying and modifying observable behaviors/skills through the manipulation of the environment. Some of the principles and methods of ABA used in educational programs include:

- Providing an environment that minimizes competing distractions and is free of extraneous stimuli and clutter to assist students in attending to relevant information.
- Utilizing visual supports as tools to increase the understanding of language, environmental expectations and to provide structure and support for students.
- Offering a variety of scheduled sensory-rich tools and activities throughout the instructional day to incorporate and address sensory differences for students with autism.
- Using observation, assessment and data collection to determine the student's skill strengths and weaknesses. This information will assist with the development of an Individualized Educational Plan (IEP), addressing areas of deficits, i.e. communication, behavior, cognitive skills, independent skills and social interaction. Goals and objectives for each student will be developed, depending on his/her needs. Ongoing data will be collected on the individual skills being targeted, and analysis of this information will be completed to determine progress.
- Teaching students with ASD in a combination of large group, small group and 1-to-1 instructional settings. Skills taught should focus on independence for the student and generalization of these skills across multiple environments and instructors. Skills identified for instruction should be broken down into smaller parts and educators should teach these sub-skills until mastery.
- Varying teaching sessions by reviewing mastered skills while teaching new skill targets to help keep the students experiencing success. This helps ensure these mastered skills are being maintained by reviewing and continually giving reinforcement to the student for responding correctly. This technique is called behavioral momentum. Reinforcement is provided throughout teaching sessions. The selection of reinforcement is ongoing. Opportunities for repeated practice will be given throughout the instructional day. Error-

MO BUTI, M.Ed-BD, M.Ed-ADMIN, Chicago, Illinois. In field of special education, over 24 years, Ms. Buti has worked with children, and now adults, diagnosed with severe/profound, moderate, mild and autism disabilities. She holds a Director of Special Education degree/certificate from Illinois and type 75 certificate. She was a teacher, Autism consultant and Chicago Public School's administrator, managing the Autism and Low Incidence Department for many years. Currently, Ms. Buti is a private Autism Educational Specialist and a dynamic international presenter, in addition to the Director of Neumann Family Services. She has a passion for learning, making visual modifications to support people with autism and teaching others to effectively work with people with autism and other disabilities.

KAREN HAMILTON BARINEAU, Ed.S, Atlanta, GA. Karen Barineau is an Autism Specialist for DeKalb County Schools. She has 24 years of experience working with students with disabilities. Ms. Barineau believes that providing structure and organization on a child's level of understanding can help to alleviate or moderate problems that arise. She has strong skills in developing visual supports, implementing augmentative communication and solving behavior problems.

In her current job, she consults with teachers on behavior, curriculum and instruction, and helps them implement the strategies in their classroom. Ms. Barineau also provides district level training on the Common Core Performance Standards for individuals with disabilities, Autism Understanding and Nonviolent Crisis Intervention. She has presented training for parents and professionals on a local, state and national level.

less teaching procedures are used to allow students to practice the correct response. Educators should use systematic prompting and prompt fading procedures when necessary to teach new skills/behaviors.

- Understanding challenging behaviors, i.e. self-stimulatory behavior, self-injurious behavior and aggressive behaviors, by observing and collecting data on the antecedent(s), behavior(s) and consequence(s). The emphasis is on positive behavioral supports that focus on teaching replacement behaviors by addressing the student's communication deficits.

B: BRAIN GYM
http://www.braingym.org/

The Brain Gym program is 26 movement activities that may foster improvement in many individuals. The exercises should be completed prior to instruction in order to improve stability, mobility and/or sensorimotor coordination. These activities assist with listening skills, hand-eye coordination and whole-body flexibility. Brain Gym movements activate the brain for optimal storage and retrieval of information.

C: CUEING HIERARCHY

Using the cueing hierarchy is a great way to change behavior. It is a simple, but systematic process of following through with directions given. You will find many terms to describe thism, such as Tell-Show-Do, Errorless Learning Prompting Sequence and Compliance Training.

When you give someone a direction in class, you will need to follow through with these simple steps to make sure compliance of the given direction is followed by the individual. "Tell" the direction one time to the student. The direction should be simple and given as a clear and concise instruction. Wait five seconds for the student to follow the direction. If the student follows the direction as given, praise the student. If not, move to "Show," a higher level of prompting. Repeat the given direction and demonstrate or gesture what you have asked the student to do. For example, if you have asked the child to pick up an item(s) off the floor, model the instruction, pick up an item to demonstrate understanding or point to one of the items that need to be picked up off of the floor. Wait five seconds for the student to follow the direction with the added prompt. If the student follows the direction with this prompt, praise the student. If not, move to a higher level of prompting, the "Do" or "Help" prompt. This is where you will have to hand-over-hand "Help" the child "Do" the given instruction.

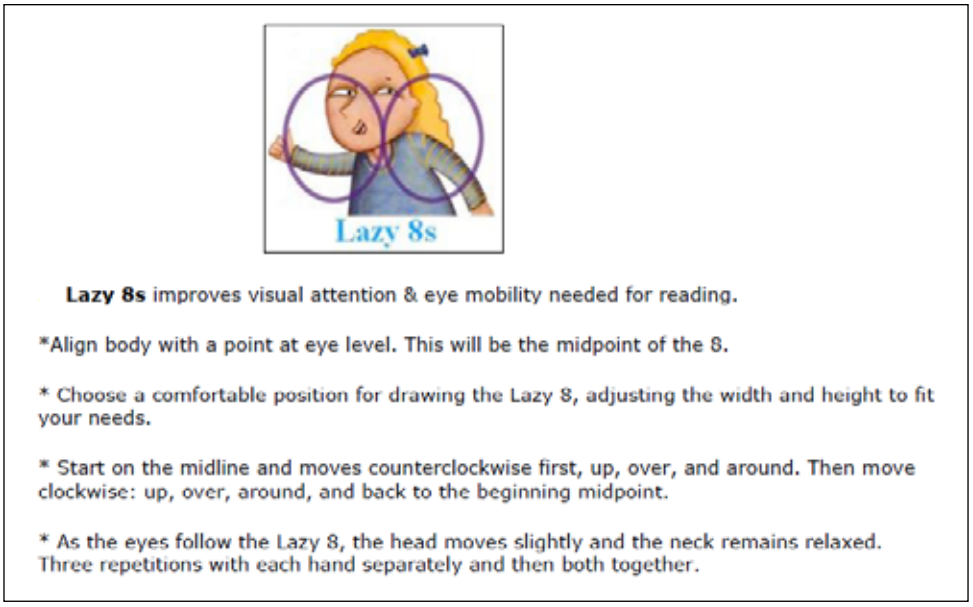
In being systematic with all instructions given in the classroom, the student will learn to follow the initial direction by understanding what was asked of them. The student will learn, over time, to follow the direction independently or they will know that they will have to follow it with assistance. No matter what direction is given, compliance will be the end goal. Remember Tell-Show-Do, a simple but effective teaching strategy.

D: DO2LEARN.COM
http://www.do2learn.com/

This is a great website that provides thousands of free pages with social skills and behavioral regulation activities and guidance, learning songs and games, communication cards, academic material and transition guides for employment and life skills. In addition, they offer premier products, including View2do, JobTIPS, FACELAND, books and apps for purchase.

E: EFFECTIVE INSTRUCTION

Students with autism learn best with structure, order and predictability within all en-



B - Brain Gym

D - Do To Learn

vironments. As every student is different, research has given us some best practices that are essential for students on the spectrum. Some of these are listed below.

- Get the students' attention prior to giving directions. When instructions are provided correctly, the chance that students will respond appropriately increases.
- Tell/give an instruction; don't ask if they want to do something.
- Use a calm voice.
- Don't repeat instructions. Use visuals in order to increase understanding.
- Provide positive feedback for compliance/direction following. Tell the student exactly what you liked. For example, "I like the way you completed your math work."
- Say what you mean, mean what you say. If you say that recess is in five minutes, follow through, because students with autism have difficulty with ambiguity.

F: FIVE (5) POINT SCALE

Research has indicated that individuals with autism learn best when taught in a concrete fashion. Another effective strategy that can be used is called the Five Point Scale. This teaching strategy was developed by Kari Dunn Buron and is a step by step process to assist individuals with understanding social interactions and controlling their emotional responses. When examining a new skill to teach, staff should break the overall skill into five concrete levels. Level five is the biggest illustration of the concept moving downward to level one being the smallest illustration. Using this scale system can benefit a student at any age or cognitive level. See the example below teaching a student to understand his/her energy levels and knowing that level three is the optimal learning level. This is an inexpensive technique that can easily be used and is most beneficial.

G: GENERALIZATION

This is applying a skill learned in one situation to other environments, materials and people. This is important, though difficult, for many students with autism. Start training students to generalize by instructing mastered skills in new environment, or with new staff or with different materials.

H: HOME BASE

Determine and label a home base room for students with autism to go when they need a little extra support or for assistance navigating a social situation or even just for a place to go where they know they will be understood. This is a place that they know is a safe place to go to because it would have a staff member that really understands autism and the best ways to support the individual. It may be reading a social story, using a visual support and/or providing some sensory items to assist the student with autism to calm down and prepare him/herself for the rest of the school day.

I: INSTRUCTION

The National Research Council, in their text, Educating Children with Autism (2001), states that, "for a child with an autistic spectrum disorder to be included in mainstream settings, the child must be able to manage social experiences. This requires careful consideration on the part of the school staff." As educators, we must teach the whole child. This includes social skills, which is a set of cognitive behaviors that allow an individual to communicate, make decisions, manage oneself and problem solve when dealing with others. Deficits in social skills will impact post-school success.

Classroom instruction must focus on working together in groups. Opportunities to communicate and socialize are key foundational skills that need to be systematically taught to our students. Educators must provide opportunities for students to work with peers to build relationships and prepare everyone for post-education experiences.

J: JOINT ATTENTION ROUTINES

Joint attention is the ability to share a common focus on something with one or more persons. It involves the ability to gain, maintain and shift attention. Educators need to develop routines within the classroom for many reasons. Classroom routines provide predictable, logical sequences involving two or more people. Establishing routines will encourage both communication and social skills. Familiar routines have a repetition of language that targets a set of vocabulary and builds upon this by providing a platform for reciprocal conversation that is both meaningful and purposeful. Individuals with autism will participate and benefit from these shared joint experiences.

K: KINESTHETIC TEACHING

Kinesthetic learning is a learning style in which comprehension and understanding take place by the student participating in the activity. The student is involved with the instructional materials and actively learning by doing, exploring and discovering. Research has shown that many individuals on the spectrum are visual learners. Kinesthetic learning adds another layer and promotes optimal learning by encompassing physical movement, coordination and a variety of motor skills into the learning process. Research has shown that kinesthetic learning results in increased learning outcomes for all students.

L: LET'S BREAK INTO GROUPS

There is limited time during the school day to create opportunities for peers to socialize outside of academic instruction. Educators must be creative and develop programs or utilize pre-existing group activities to provide opportunities for individuals with social skill deficits to practice appropriate behaviors with typical peers. A variety of skills can be taught when utilizing groups.

M: MOTIVATION

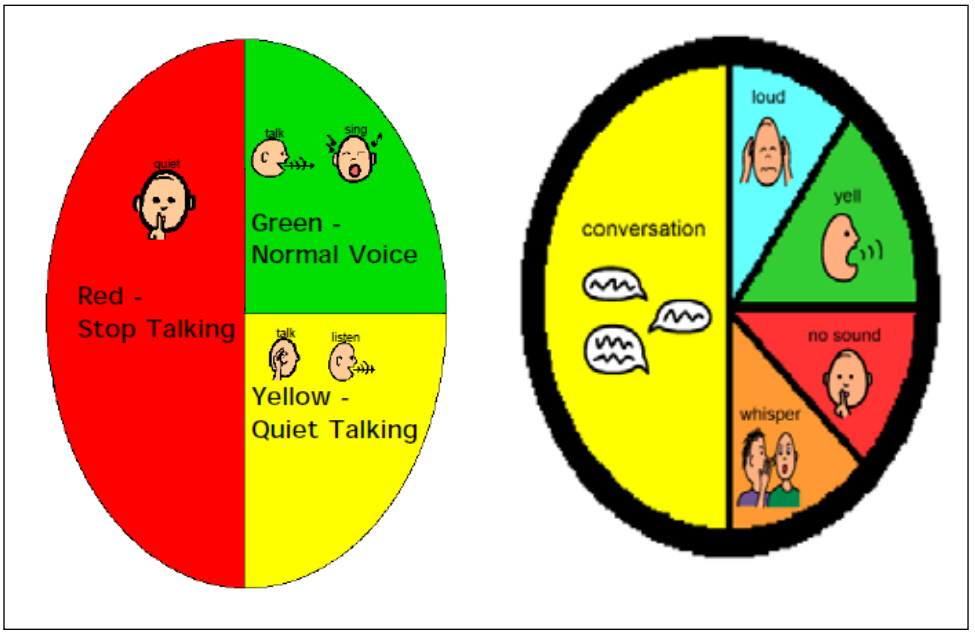
Determining the most powerful reinforcers for students is very important. Updating known reinforcers for a student is ongoing because likes and dislikes will change over

N - Noise Meter

time. What a student is willing to "work" for today may be totally different tomorrow. Students with autism may have different "pay checks" that they work for. As educators, we need to think outside the box to determine what these motivating activities are for each individual student. Some students may only be able to complete one task prior to needing to receive reinforcement, while others might be able to complete more tasks.

N: NOISE METER

Students with ASD respond well to visuals. Creating a visual noise meter to show when something is too loud or too soft can be used for multiple purposes. Staff can use this meter to show a student when they are talking too loud or too soft. A student may also use this meter to communicate that the environment is too loud for them and they may need to leave to a quieter environment.



Q - Quiet Programs

O: ORGANIZATION

When you have an individual with autism in your classroom, it is best to learn all you can about this disability and get involved in understanding the strengths and weaknesses of the individual student. Children with autism tend to do best when they have a highly-structured classroom. Set up a schedule for your classroom. Try to keep disruptions to this schedule to a minimum. If there is an unavoidable schedule change, prepare your student for it in advance. It's also important to be consistent in the way you interact with your student and deal with challenging behaviors.

Visual Strategies have been successful with individuals who have a wide array of skills and abilities. The visual cues are prompts that exist even when the teacher is not present. Visual cues increase the student's ability to work successfully and independently without interaction or intervention by the teacher. Checklists, chartsand color code systems to assign duties and responsibilities are just a few visual supports that can be established within a classroom. The possibilities are endless.

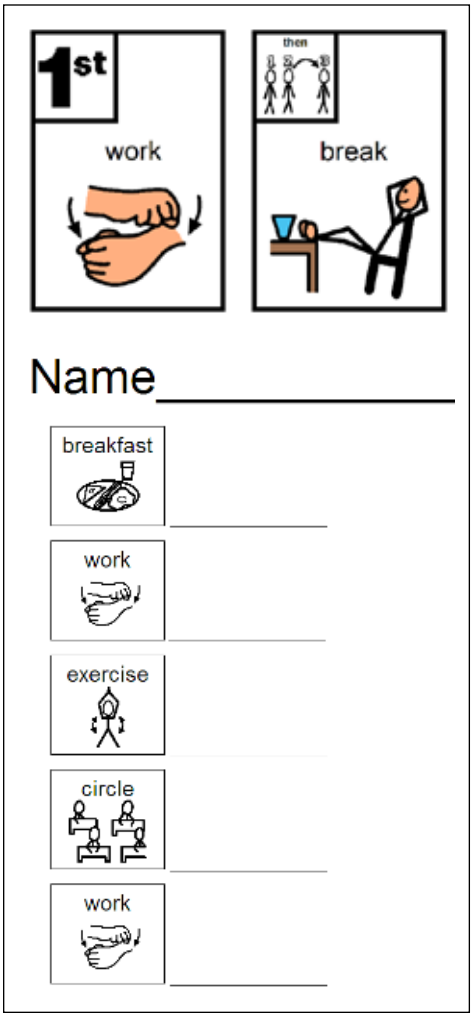
P: PHYSICAL BOUNDARIES

Clearly defining areas throughout a student's day assists with their understanding of what is expected in the different areas. It clearly communicates to the student where something begins and where something ends (like their work space). Some physical boundaries can also block out distractions. Some common physical boundaries used in the classroom are:

- Carpet/carpet squares
- Book shelves/book cases
- Tables
- Separate rooms
- Desks
- Chalk boards
- Display boards
- Hula hoop on floor
- Containers
- Room dividers/office panels
- Study carrels
- File cabinets
- Place mats
- Curtains, shower curtain
- Tent
- Gym mats
- Tape on the floor/post-it notes on floor

Q: QUIET PROGRAMS

Challenges with social understanding and impulsivity for students with autism can often result in the student talking out in class. Students with ASD may have difficulty taking the perspective of others and may not be aware of how their talking affects the class as a whole. The behavior of being "quiet" must be systematically taught. Many things can be used to teach when it is appropriate to talk and when it is not. A visual support could be used to turn talking time on and off. The visual is a concrete representation for the student to understand if talking is allowed. A voice scale from 1 to 5 (1- no talk-



S - Schedules

ing, 2 - whisper, 3 - conversation, 4 - loud, and 5 - outside voice) could be used in the classroom. The student would need to be taught all five levels systematically. Positive reinforcement for maintaining a particular level should be given to the student for following the volume chart. Talking cards could be given to the student at the beginning of class. When the student wants to comment on the lesson, he/she must give a "talking card" to the teacher. When the cards are gone, the child no longer has an opportunity to talk in class until the next period. The ideas are concrete and provide a clear understanding of when talking is allowed and when it is quiet time.

R: ROLE PLAY

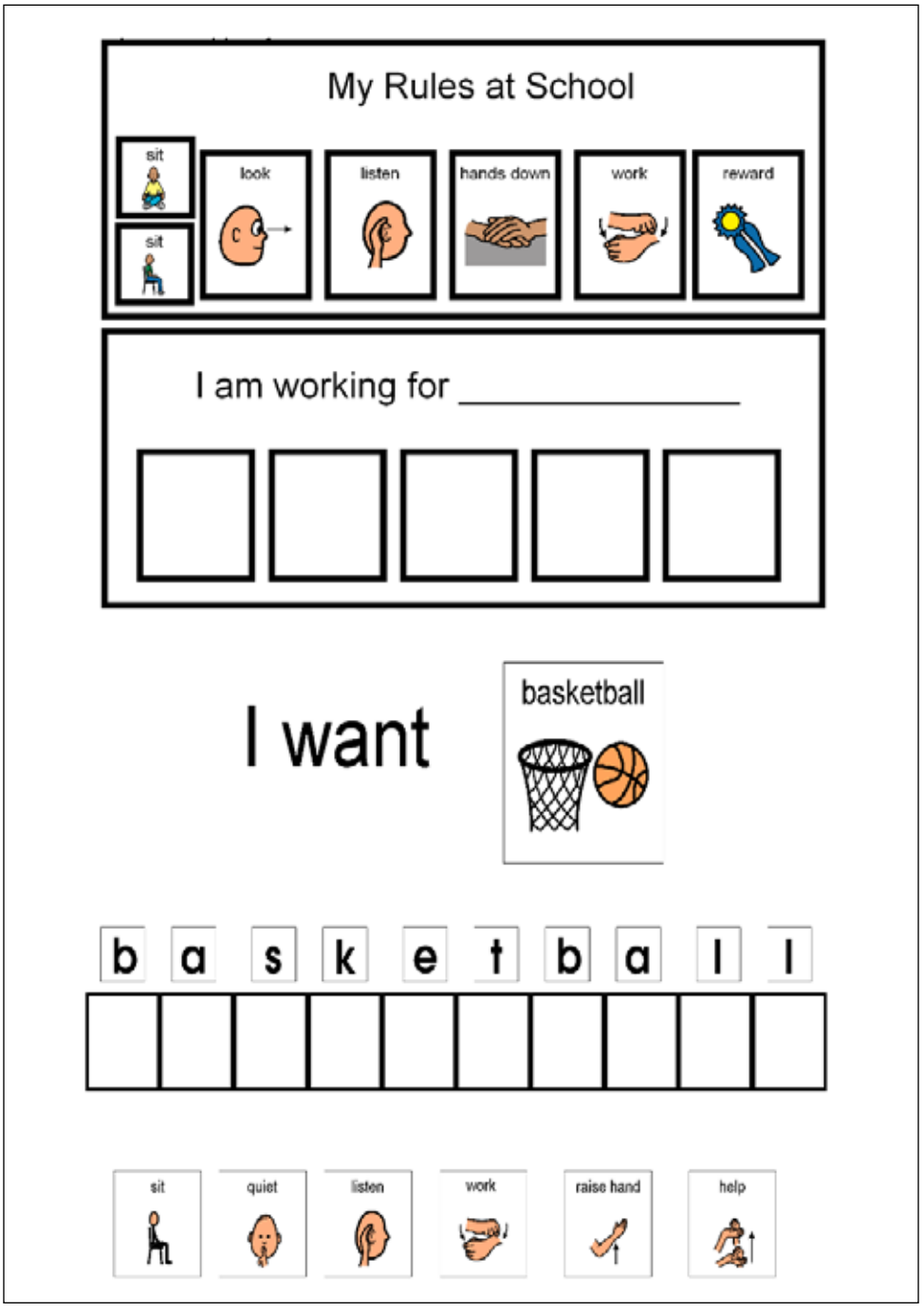
This is a strategy to teach social skills and a variety of other skills. Students can practice modeling behaviors after another student, from a video or in real life. Role playing can be used to teach a student many different tasks and behaviors. Explanation of the targeted behavior should be reviewed in simple steps. Demonstration of these skills should be modeled by others before the student is asked to demonstrate/role play the skill on their own.

S: SCHEDULES

The use of schedules for students with autism is essential. A schedule visually represents daily activities. Schedules can reduce anxiety by making the day predictable. Schedules can have embedded motivating activities to get students through less motivating activities. This is not a support that should be faded out over time, but rather to be made more age appropriate and sophisticated.

T: TOKEN ECONOMIES

This is a type of positive reinforcement system that makes earning a reward concrete. The student is involved in the process by choosing what he/she is working for (what their reinforcer will be). The student earns "tokens," i.e. checks, markers, points, chips, stars, etc., for completion of a task or specific appropriate behavior. Once the token board is full, then the student exchanges the tokens for the chosen reward. The tokens are like paying the student for completing a task or behaving a particular way and then cashing them in for the final chosen reward. The end goal is having the student self-manage his/her behavior, deliver tokens when he/she has completed work and behaves appropriately, fading adult support over time.



T - Token Economics

U: UNDERSTAND THE FUNCTIONS OF BEHAVIOR

If an individual with autism is engaging in challenging behavior, it is essential to understand the problem behavior prior to developing a plan to change the behavior. Everyone engages in behaviors for one of four reasons: attention, avoidance/escape, to gain access to a tangible item and/or for automatic or sensory reasons. Individuals are engaging in challenging behavior in order to "get" or "get away" from something. Data collection is needed to determine the true function of the problem behavior. The process of completing a functional behavior assessment is needed. This will look at the variables that are maintaining this behavior over time.

V: VISUAL SUPPORTS

Visuals are anything the eye can see. This includes objects, photos, drawings, words and more. A visual support is constant, whereas

auditory information is fleeting. Visual information can be reviewed again and again. Visuals can be used to support communication, organization, choices, manage behavior, social skills and more. Visuals can reduce the number of verbal prompts needed and increase independence.

W: WAIT STRATEGIES

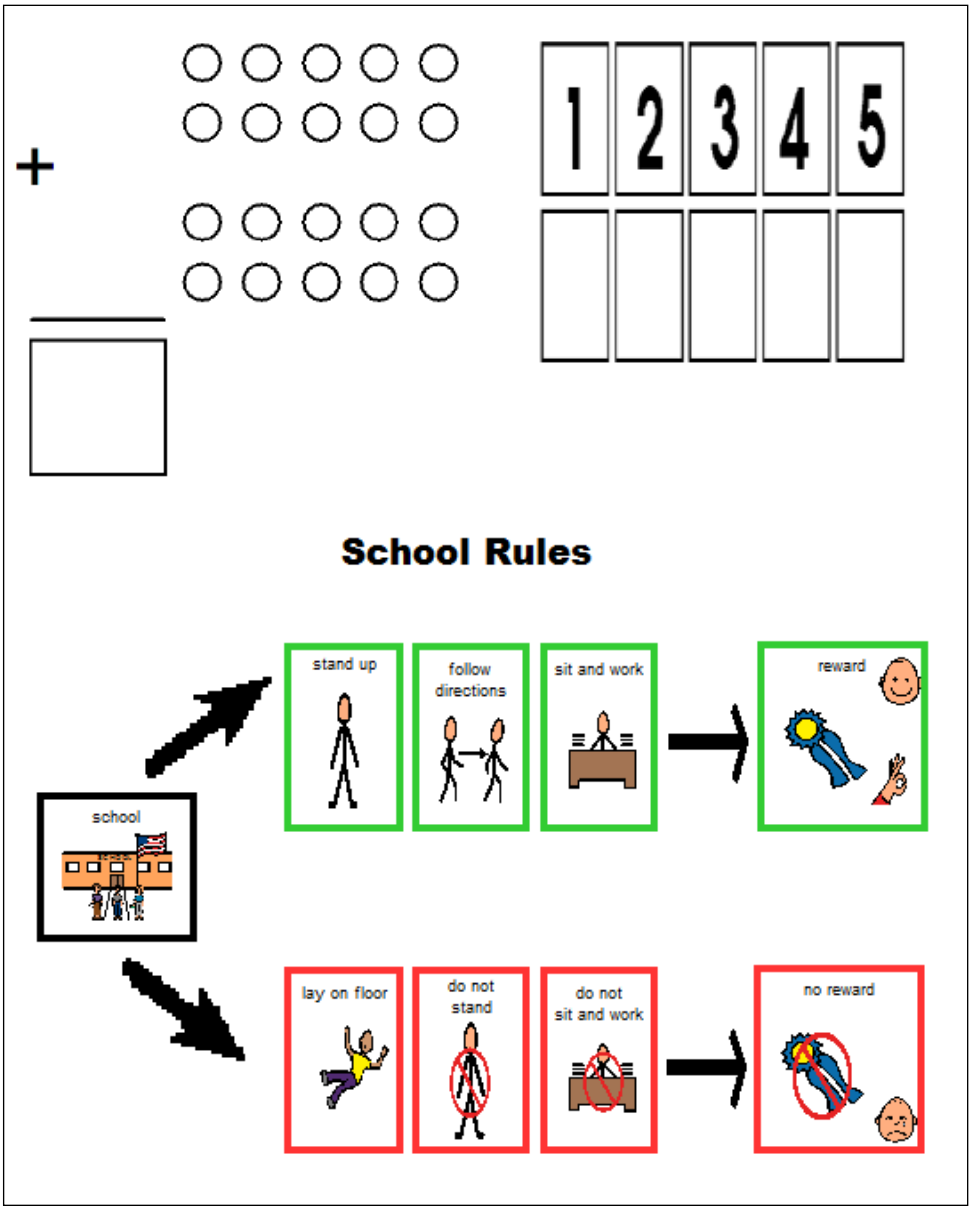
Students with ASD may need systematic and explicit instructions to learn how to wait. A visual support, such as a stop sign or a written word spelling out the word "Wait," may help to make the abstract concept of waiting to be more concrete. Begin teaching how to "Wait" by showing the visual to the student and start with a short "Wait" period. When the time is finished, reward the student for his/her compliance. Gradually build up wait-time. Remember to always look for natural opportunities to teach waiting, i.e. lining up, getting lunch, ordering at a restaurant, accessing computer, taking turns. The use of an auditory timer to show the passage of time may be beneficial too.

X: EXAMINE YOUR DATA

Educators are charged to take an enormous amount of data throughout the school year. Often teachers are unsure why the data is being collected. They are aware this is a duty and responsibility but do not understand the purpose of the data collection piece. Examining data collected can tell us many things. When collecting behavioral data, educators can determine common triggers, frequencies of ongoing behaviors and responses of staff to these behavioral challenges. This will lead to a better understanding of the functions of problem behavior. Educators can gather data to determine whether or not behavior is changing once a behavior intervention plan has been put into place. Are the desired replacement behaviors increasing and are the challenging target behaviors decreasing? These important questions can be answered when examining the data that has been collected. If data shows that the intervention plan is not effective, changes can be made.

Y: YES MANAGEMENT

Individuals with autism may get confused or frustrated when told "No." Often, educators can get the same message across but will keep the atmosphere more positive by saying "Yes" over "No." For example, when a student asks, "Can we go outside?" Instead of answering "No," change it to a "Yes" answer by saying, "Yes, we can go outside as soon as you've completed your work."



V - Visual Supports

Z: ZERO FAULT OF STUDENT

Our philosophy is that the learner is always right. When students are not learning as expected, people see this as the student's fault. We believe that the student is telling us something. Lack of progress is telling us what and how we are currently teaching is not working for this particular student. We must be responsible for providing effective instruction to meet the unique and individual needs of the learner. If the student is not making progress, we must change our approach by increasing reinforcement, implementing effective visual supports and providing systematic prompting. The focus should be positive and believe in the potential of all students. Students with autism are exceptional and have many special gifts. We just have to be creative to find the exact strategy that works for this learner. It may sound like a little bit of Alphabet Soup when trying these strategies for autism spectrum disorders. It is definitely worth working through these simple, but effective, 26 tips when teaching individuals with autism. You might begin with strategy Letter "A," but find, for this student in your classroom, it was strategy Letter "Y" that made a difference. Just keep working through the alphabet …. one letter at a time. ■

We have Co:Writer, Now What?

Implication Strategies and Outcomes that Work for our District

In Barrington 220, we follow a UDL approach and Toolbox philosophy. We believe all students should have a variety of tools and programs available at their fingertips to support their access to the curriculum. The key to implementation and successful use of tools is to make sure the students have a variety of tools and programs to choose from; the tools are universally available in all environments; and that staff, students and parents are familiar and comfortable with the tools and programs available for all of our students.

In this article, we will share our tips to making this UDL/Toolbox philosophy a success by walking you through how we implement one of the many tools that we use districtwide, Co:Writer. We will also share a district research study that was recently conducted with fourth grade students.

We have been using the program Co:Writer in our district for many years, but it wasn't until four years ago, when we purchased a district site license, that we really saw the impact it made for our students. Purchasing the district license allowed us to put the program on the district computer image, which made it available on all computers in the district. This license also allowed students to load and access the program at home.

TYLER'S STORY

A few weeks into the school year, when we first had Co:Writer available districtwide, I was working with a student named Tyler. I was providing an individual AT consultation with him, his OT and his classroom teacher. Tyler was in the gifted program in one of our elementary schools. He had many ideas, but struggled so much with spelling that his writing did not reflect his in-depth ideas and knowledge. After modeling how I used Co:Writer to write, he tried out the program and could not believe how easy it was to use and how much it helped him. About a half hour into the consultation, he said "This program is amazing, why doesn't everyone know about it?" It was at that point that I changed the way I trained on Co:Writer and we have had terrific success with implementation since then!

FEATURES ABOUT THE PROGRAM THAT MAKE IT A SUCCESS

In our district, we have a variety of tools and programs available for all students that support access to the curriculum. We use the same model for training and implementation of all tools and programs. Yet, we have found that Co:Writer is the program students are using the most throughout the district. The following are some features of the program that truly make a difference for our students.

KELLY KEY is an administrator in Barrington District 220 in Barrington, Illinois, a unit school district with twelve schools. She has been the Assistive Technology Coordinator and Special Services Facilitator in the district for the past ten years. Prior to becoming an administrator, she taught special education for nine years. She has a Bachelor's degree in Special Education from Northern Illinois University, a Master's Degree in Early Childhood Special Education from Northern Illinois University and a Certificate of Advanced Study in Educational Leadership from National Louis University. She also has an ATACP (Assistive Technology Applications Certificate) from the University of California - Northridge.

LINDSAY ANASTACIO is currently in her 10th year of teaching at Countryside Elementary School in Barrington, Illinois. She is the intermediate (grades 3-5), Cross-Categorical Full-Instruction Special Education Teacher. Since starting her employment with Barrington, she has sat on the district's Assistive Technology Committee and has taken on several leadership roles, including presenting to district staff and leading sub-committees.

Lindsay completed her undergraduate degree in Special Education at Northern Illinois University and has since then received two Master's degrees from Concordia University on Curriculum and Instruction and School Administration.

- **Integration with Programs** - Co:Writer works terrific with any word processing program. Students love they can use this tool with any program they can type into. We use Google Docs throughout the district, and Co:Writer works great with this program. Students that use speech recognition software (ie: Dragon Naturally Speaking) have also found it helpful to pull up Co:Writer and use both programs simultaneously when writing or editing their work. Students that need additional support when using other programs by Don Johnston, find it very easy to pull up Co:Writer. (ie: First Author, Write:Outloud, Draft:builder, and Read:outloud).
- **Flexible Spelling** - So often, students' spelling impedes their writing quality and quantity. It is amazing how this program is able to pick up the student's spelling approximations and give them the confidence to write to their full potential.
- **Word Bank Feature** - Having the topic dictionary and word bank features has helped our students tremendously with idea generation and increasing the length of their writing. The new version, Co:Writer 7, makes it even easier for students to create their own topic dictionaries and word banks in a matter of seconds.
- **Co:Writer App** - Many districts have replaced computers with tablets. The Co:Writer app on the iPad is a terrific word processing tool for our students.

RESEARCH PROJECT BY LINDSAY ANASTACIO

As a classroom teacher and a member of the Assistive Technology Committee, I feel passionate about giving students the tools to reach their full potential. In order to show student success through data collection, I chose to complete a research study on the effectiveness of Co:Writer with elementary students. I focused on students in the fourth grade at one of our elementary buildings.

First, I designed a rubric to grade the student's work. The rubric was comprised of three categories: vocabulary use, spelling and sentence structure. I used this rubric to collect baseline data from a prior writing assignment. After consulting with the fourth-grade classroom teacher, I set up a time before the next writing assignment was assigned to train the class and the classroom teacher on the use of Co:Writer. I checked in with the class periodically to answer any questions or re-train as necessary. In the meantime, I developed a survey for the students to complete to provide me feedback of their opinion of the program. When the students turned in their work they were given the survey and the results showed that the students liked Co:Writer, felt it helped them with their writing and were interested in learning more about SOLO. The assignments were graded using the same rubric, and the results showed significant improvement in vocabulary use, spelling and sen-

Lindsay Anasacio (Teacher & AT Point Person) provides a training for the 4th graders at her school.

BARRINGTON 220

My AT Action Plan:

Which students will I use SOLO with this month?

Student	Tool/ Program (ie: Co:Writer)	Specific Part(s) of Program to focus on

What additional goals do I have for AT this year?

_____

_____

These are the additional AT resources that I plan to explore more this year: (circle all)

I will join the AT Committee
I will check out the district AT website
I will share information with the people I work with about the following tools _____
I will explore the tools in the AT Toolbox
I will sign up for more AT trainings this year
I will contact Kelly Key to provide additional support or training to _____
Other: _____

Don't forget to use the District AT Website!!!
www.barrington220.org Sign in- Staff- AT Resources

AT Action Plan provided at each staff training session. This allows staff to personalize the information provided, set personal goals , and determine which students they feel this will support.

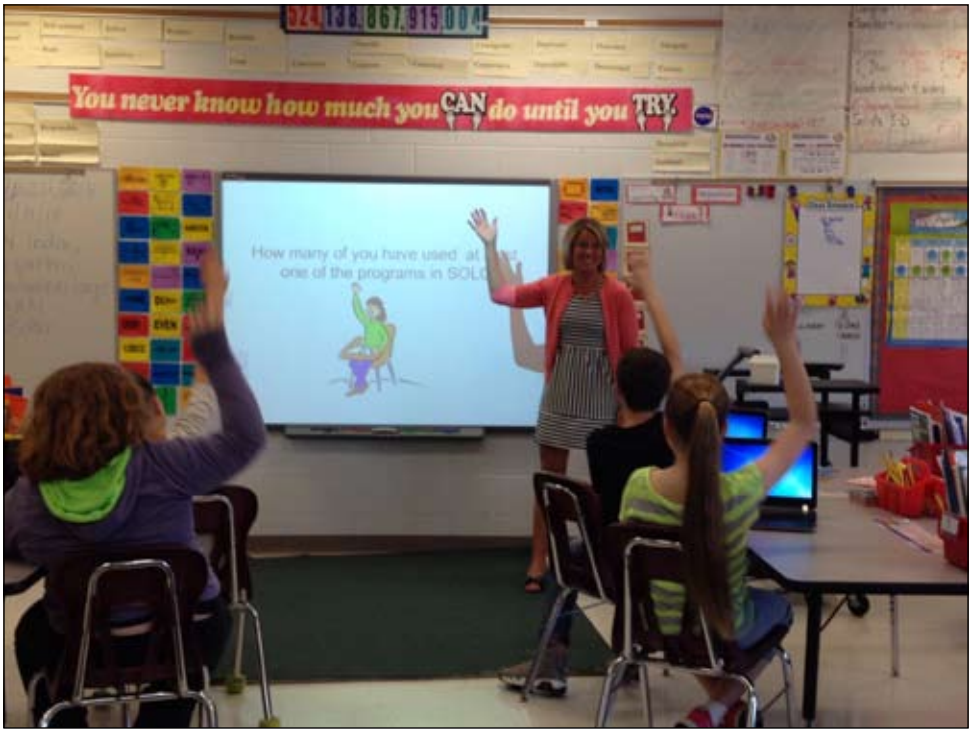
tence structure. This process was repeated two more times to ensure validity, and the results continued to show growth in the three focus areas of the rubric.

TIPS AND STRATEGIES FOR TRAINING AND IMPLEMENTATION

This research study helped to guide our implementation and training on this terrific tool. Below, we share what we have done to make Co:Writer a seamless tool available in our student's tool belt.

Student training - The model for training we have found most effective is to train full classes of students on the program. We feel it is important for all students and staff to be knowledgeable about and feel comfortable using the program and then allow the students to decide if they benefit from using it when completing an assignment. I have trained classes at all levels (third grade and up) on the program, yet the primary focus we have had is on our fourth, fifth and sixth graders. During the training, we allow students to learn the program hands-on and then complete a short writing assignment using the program.

Although going into the schools and training full classes on the program is one of my favorite things to do, since I am the only AT Coordinator in district, it would be impossible for me to provide all of the class training in district. Because we have 12 schools and one of me, we have developed a district Assistive Technology Committee. Our AT Committee is comprised of teachers, therapists, administrators and assistants throughout the district (general ed and special ed). These are staff that are currently using assistive technology with students and are excited about the difference it makes for our students and want to learn more. We have at least two members from each of our schools on our committee. All staff on the AT Committee are considered "AT Point People" in their buildings. We currently have over 40 members that meet once a month after school to collaborate and share ideas. In addtiona to our AT Meetings, twice a year, we have AT Collaboration Days. This is a full day of intensive training that I provide all members. This full day allows staff to have one-hour mini training sessions on specific tools, apps or programs. During these sessions, I walk the staff through not only how to use the programs, but also how to train



Kelly Key (AT Coordinator) provides a student training on Co:writer to a 4th grade class. Full class trainings have proven to be the most effective way to spread the word and provide hands on experience with the program!

Diane is an OT that serves as the AT Point person in her buildings. Our AT Point People t-shirts are worn monthly by AT committee staff to remind people they are the go to people for AT support. It is also a great way to remind people about AT and keep the momentum going!

others. They walk away with all of the tips sheets, PowerPoint presentations and step-by-step instructions on how to train others on using the programs. I now have AT Point People provide the full class student training in their buildings when possible.

Peer training - When I provide class training, I often ask a student from the class that is already using Co:Writer to join me in providing the training. This has been a great way for the student to feel empowered as a leader. This has been such a success that we are starting to provide more AT Peer leader training sessions, both full class and small group, throughout the district. We have even talked about starting an AT Peer Club after school and getting the students t-shirts to identify themselves.

Staff training - For the first few years of our SOLO roll out, I provided monthly after-school and summer trainings for our staff and parents. The basic trainings took place during two sessions, each for two hours at a time. During the trainings, I provided a demonstration of the program, hands-on training and an activity to complete using the program (i.e. write me an email about what you think of Co:Writer and how you will use it with your students; or create a topic dictionary based on something you did over the summer and write a paragraph about that topic using the word bank feature). I also had an AT Action Plan for staff to fill out throughout the trainings. This allowed them to write down features they like about the program, list specific students they would like to trial it with, set goals for use, etc. At the end of the session, staff would share with one another the features they like best about the program and their goals for implementation. I also followed each session with homework. Staff could choose from a list of homework choices. Some of the options were:

- *I will teach two staff members how to use the program this week.*
- *I will introduce the program to my class this week.*
- *I will contact Kelly Key to provide a training to my class or building this week.*
- *I will share information about the program at a staff meeting this month, etc.*

I also provide advanced follow-up training on the program to teach additional features and allow staff and parents to increase their comfort level with using the program. During these advanced sessions, staff use the program with a variety of other programs (ie: Google Docs, email, First Author, Write:OutLoud, etc).

In addition to providing training that staff can sign up for, I often will push into their meetings and provide training during designated staff meetings (i.e. provide a training at a monthly OT/PT meeting, provide a training to classified staff during an in-service day, etc.).

Parent Training and Support Group - The tools and programs that students use in school are also available to use at home. Parents are always welcome to attend the staff trainings that I offer. I post these on our website for parents to view. I have also designed parent AT support group sessions. This allows parents to meet with me as a group and discuss the assistive technology tools or programs their child is using, share tips with one another and ask questions. This has been a very nice way for parents to learn from me and from one another. I also encourage the students to train their parents on the program or tools that they are using. This is part of their homework after meeting with me. Tips sheets and resource guides are also available for parents to download from our website.

TIPS FOR SPREADING THE WORD AND ONGOING SUPPORT AND IMPLEMENTATION IDEAS

We have a variety of very effective ways to keep the momentum going and spread the word about the programs and tools that we use in district.

AT Tip of the Month - In each building, there is a designated AT Point Person that sends out the AT Tip of the Month. Each month we feature a tool or program and send out information to the entire staff in each building to provide them with information on this tool, as well as any videos, tip sheets or resource guides, to support them.

Website - Two years ago, we developed an AT Resources Website for district staff. In addition to having district forms and training information, the website provides pictures, videos and quick guides for a variety of tools in each of the academic areas.

AT Point People - Our AT Point People in each building have provided a variety of creative activities to help spread the knowledge about the AT tools and programs available in district. Once a month, they wear their AT Point Person Shirts. This not only helps to identify them as an AT support person, but also provides a visual for staff to remind them of the tools and programs available. Each staff member also receives a "flare" after attending in-services. For example, after attending a Co:Writer training, they receive a button with the Co:Writer symbol on it. They put these buttons on their district lanyards and wear them proudly. This is just another way for staff to be reminded about what is available, or ask if they do not know what something is. Our AT Point People have done some very clever things to spread the word and knowledge on the AT that is available in their buildings. One group of staff recently put on a skit to teach their staff about some of the tools in our AT Toolboxes. Other staff provided a demo of the tools available in the boxes, and some staff have lunch and learn groups in their teacher's lounge. The more we can help spread the word, knowledge and comfort level of these tools and programs, the better it is for all students!

Please contact me with any questions or if you would like more information on any of the resources that I touched on. kkey@barrington220.org

Check out these resources and more on the DJ website
www.donjohnston.com
Co:Writer Quick cards
Co:Writer Train in 30 ■

Eye Tracking Technology

and Students with Severe and Complex Disabilities

Eye tracking or gaze tracking technology, in its most widely used form of optical tracking, has now been around for some time and is used extensively in areas such as medical research, cognitive studies, computer interface and website design and the analysis of the effectiveness of marketing materials. Eye tracking devices work by shining an infra-red light into the user's eyes and then using cameras to measure the light reflected from the cornea and its position relative to the user's pupils. This can then be converted into cursor movement on a computer screen, mapping where the user's eyes have looked around the screen.

For students with a physical disability that prevents their use of the standard computer mouse, or even alternatives such as a trackball or joystick, this opens up huge potential. As long as the students can move their eyes, with eye tracking, they have the ability to control the cursor on a standard PC. By combining this with the facility to perform mouse clicks by fixating (or dwelling) on a particular point on the screen, students with severe physical disabilities can be given complete mouse control with just eye movement. An on-screen keyboard can be used with mouse control to give access to all text functions. Computer-based augmentative and alternative communication (AAC) software that offers on-screen grids with speech output can also be accessed as if using a mouse or touch screen, and this is where eye tracking has been used most frequently with students with disabilities.

Within the disability market, eye tracking technology first appeared within dedicated devices, such as Tobii ATI's MyTobii P10, a Windows computer-based AAC device, released in 2006, that retailed for $17,000. Tobii ATI has been at the forefront of using eye tracking technology to support individuals with disabilities and, in 2006, released the PCEye, an eye tracking unit designed to mount at the bottom of a computer monitor

JAMIE MUNRO became involved in working with people with physical disabilities in the mid 1980s when, through a personal connection, he began developing computer systems for adults with spinal injuries in conjunction with Stoke Mandeville Spinal Injuries Unit. His company was one of the first to develop access products for users with physical disabilities for the Apple Macintosh computer platform.

In 1995, he became Managing Director of Don Johnston Inc.'s UK operations, distributing their products to special education establishments throughout the UK.

When Don Johnston's UK office became part of Inclusive Technology in February 2009, Jamie became Manager of the Information Team. The Information Team provides training and consulting to special education throughout the UK and works closely with Inclusive's Development Team on the design of new products. He has given talks on using technology to support those with disabilities internationally.

and work with a standard Windows PC and Windows software. This retailed for $6,900, considerably less than a dedicated device.

As a direct access method, eye tracking technology can offer much better access than using switches. It is significantly quicker and less tiring than traditional single- or two-switch scanning for keyboard emulation and access to AAC software. Because it is a cursor control device, it also gives students access to software, such as painting programs, which are often inaccessible to switch users.

Eye tracking technology does not just open up opportunities for those users who have a physical disability but are cognitively able, it can also be used with students with more profound and complex disabilities too. It can provide direct access to cause and effect activities on the screen without having to use an intermediary input device, such as a switch, and act as a powerful assessment tool, giving feedback on a student's abilities and preferences.

However, despite the opportunities eye tracking technology presents to such a wide range of students with disabilities, it is still perceived by many as the access method of last resort, especially for students with more profound disabilities, and only to be tried when more traditional methods, such as switches, have proved to be unsuitable. There have been four areas that have prevented the extensive adoption of eye tracking:

- The cost of the hardware

Figure 1: EyeMouse Play Palette and Setup Screen

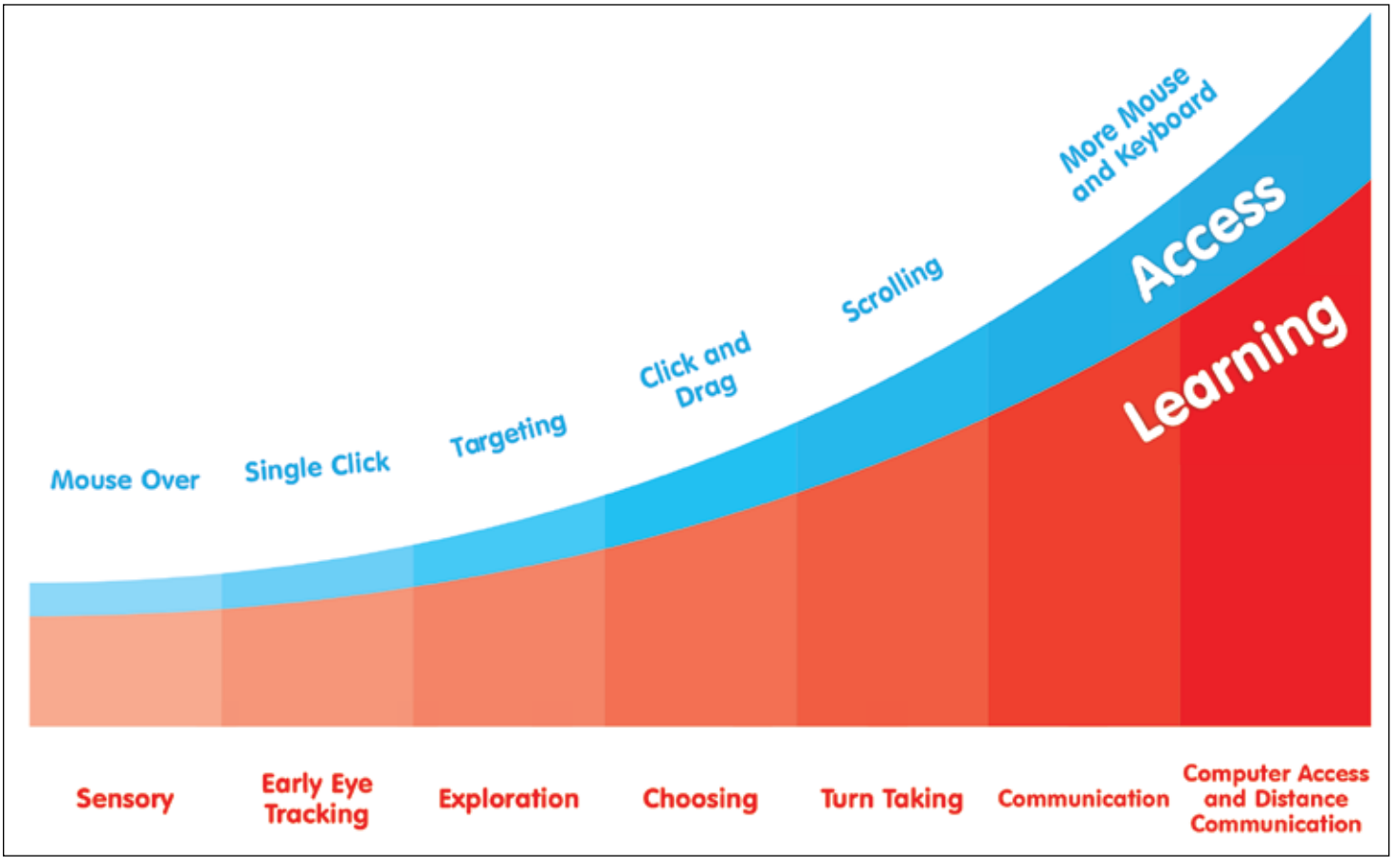


Figure 2: The Inclusive Eye Gaze Learning Curve

- The perceived complexity of setting up the hardware and software with students with more profound disabilities
- The current lack of suitable software for those with more profound and complex needs, both in terms of use and assessment
- The limited knowledge amongst professionals to implement eye tracking technology for students with more complex needs

The cost of eye tracking units that can be connected to a standard PC or laptop has gradually fallen since 2006. The latest incarnation of the Tobii PCEye, the PCEye Go now retails for $1,995, less than 30 percent of the cost of the original unit. Eye tracking units are also beginning to appear from other manufacturers; the MyGaze from Visual Interaction GmbH is similar in function to the PCEye Go but retails for $1,425.

Eye tracking units need to be set up, or calibrated, to work with the eyes of a particular individual. While this is a relatively simple task with students who are cognitively able, it can prove sometimes difficult when working with students with more severe and complex needs. Inclusive Technology has worked with Visual Interaction GmbH, the manufacturers of the MyGaze eye tracking device, to create an interface more suitable for use by teachers, therapists and other professionals working alongside students with profound and complex disabilities. EyeMouse Play is designed to be quick and intuitive to set up, with the option of a one point calibration. See Figure 1. It is simple to alter the cursor functions and dwell settings while in use by altering the settings through keyboard shortcuts without leaving the activity being used.

It is possible to easily adapt simple mouse driven software for use by eye trackers for students with complex disabilities. Software designed to teach basic mouse skills, such as Inclusive Technology's IT Mouse Skills ($88), and simple touch screen software, such as Inclusive Technology's Target and Touch Patterns ($98) and Target and Touch Music ($98), are particularly good for this. However, simple software designed for use with eye tracking devices with students who are at an early developmental level that addresses skills required to use eye gaze, such as tracking, targeting and fixating, has begun to appear. One of the first was Sensory Eye-FX from Sensory Guru ($799), a collection of 30 activities, from cause and effect to choice making, grouped into sections covering Screen Engagement, Object Displacement, Zoned Focusing, Active Exploration and Controlled Targeting.

Figure 3: Attention and Looking Front Screen

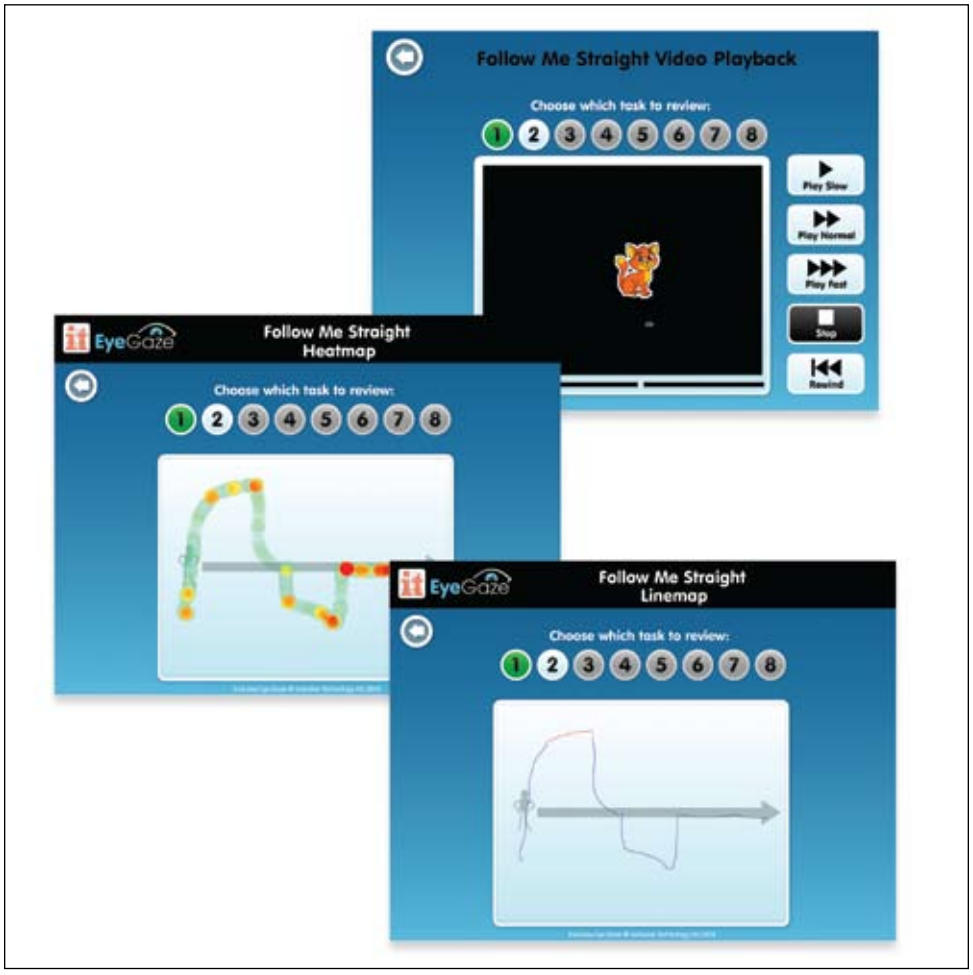


Figure 4: Analysis Tools of Attention and Looking.

Other new titles have begun to have some assessment tools included within them. Look to Learn from Sensory Software International Ltd. ($600) is a collection of 40 activities, from cause and effect to simple choice making, with the ability to create "heat maps" that show where the student has looked on the screen and for how long during an activity. The Timocco range, though originally designed to track body movements and gestures on a standard PC using a simple webcam and two brightly colored sphere gloves, has been adapted to work with eye tracking technology. The 47 games can produce heat maps and line traces to show eye movements around the screen during an activity.

In 2011, Inclusive Technology published the Switch Progression Road Map, to provide those working alongside switch users with a framework for developing switch skills, from cause and effect through to scanning and choice making. It proved extremely popular and is used extensively by teachers, therapists and other professionals around the world.

Based upon it's success, we are developing the Inclusive Eye Gaze Learning Curve. See Figure 2. As with the Switch Progression Road Map, the Inclusive Eye Gaze Learning Curve provides a framework for using eye tracking technology for developing students' computer access and communication skills, from cause and effect with simple mouse over activities through to distance communication with advanced mouse and keyboard skills.

Inclusive Technology has recently released their first software package for the Inclusive Eye Gaze Learning Curve, Attention and Looking ($255). Designed for those who are beginning to use eye gaze, Attention and Looking consists of 18 carefully graded activities for use with eye gaze devices and is designed to assess and teach attention and looking skills, simple access skills and an understanding of eye control. These activities are structured into three sections: Tracking, Fixating and Locating. See Figure 3.

The Tracking section provides activities designed to attract the student's attention and encourage them to look at and follow images on the screen, helping them to develop tracking, visual attention and discrimination skills.

The Fixating section provides activities designed to encourage the student to look and keep looking at the screen. This helps them develop their visual attention and fixation skills and helps teach mouse clicks using dwell.

The Locating section provides activities to encourage the student to explore the screen using the mouse cursor, developing their visual scanning.

All of the activities included in the three sections can be fully customized to meet an individual student's requirements and interests.

Attention and Looking has extensive analysis tools built in to enable the continual assessment of a student's abilities and progress. It provides a live video recording of the student's gaze during an activity, a heat map showing where the areas of concentrated gaze occurred during an activity and a line path showing the path of the student's gaze during an activity. All of this information can be saved for an individual student and reports of detailed timings, options chosen and heat map analysis of eye gaze behavior during activities can be printed out. See Figure 4.

Two more packages will follow this year - Exploring and Playing, covering turn taking, exploring and error-free choice making, and Choosing and Learning, covering preferred, linear and multiple choice making.

Inclusive Technology is now building eye gaze into its new software as a standard access method alongside mouse, touchscreen and switches. HelpKidzLearn is an online resource of over 80 activities for students with disabilities. As new activities are added, eye gaze will be a selectable access method when it is appropriate for the activity. Six new activities already have this option and a guide book is also available to show how existing activities can easily be adapted for use with eye tracking devices. ChooseIt! Maker 3, Inclusive Technology's award winning online resource for creating personalized learning materials, also has eye gaze as a standard access method.

We are still very much at the beginning of understanding how eye gaze technology can be used to assess and support those with a wide range of disabilities. As the price of the hardware continues to fall and more software is developed, more professionals are becoming interested in how this exciting technology can be used with their students.

REFERENCES:

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The DO-IT Success Panel:

Words of Wisdom from Students with Disabilities in a Transition-to-College Program

Participants in DO-IT Scholars, a technology-rich transition-to-college program, know a lot about success and they are eager to share lessons learned with other students with disabilities. Through this award-winning program, the Disabilities, Opportunities, Internetworking and Technology (DO-IT) Center at the University of Washington (UW) has, since 1992, helped young people with disabilities prepare for and succeed in college, careers, independent living and leadership roles in society. Primary funding comes from the State of Washington; the Boeing Company, Microsoft and the National Science Foundation have also contributed funds to support the DO-IT Scholars.

DO-IT Scholars typically enter the program as high school sophomores, through a competitive application process. Once accepted, a staff member travels to each student's home to provide a family consultation and deliver a laptop computer with assistive technology as needed. Online mentoring, where students are engaged with a large community of peers and mentors, soon follows. DO-IT Scholars attend up to three summer sessions on the University of Washington campus, where they learn about college life by living in a dorm, meeting mentors and faculty members and making new friends. Academic classes during the summer program teach them about careers, college preparation, leadership and self-determination. Third-year students attend the program as Staff Interns – providing leadership and programmatic support for the summer session.

THE INTERN SUCCESS PANEL

Each year, a highlight of the DO-IT Summer Study is the "Intern Success Panel," where third-year students share their experiences with incoming DO-IT Scholars who are new to the program. Shared below are excerpts

DR. SHERYL BURGSTAHLER founded and directs the DO-IT (Disabilities, Opportunities, Internetworking and Technology) Center at the University of Washington. Dr. Burgstahler is an affiliate professor in the College of Education at the University of Washington in Seattle. Her teaching and research focus on the successful transition of students with disabilities to college and careers and on the application of universal design to technology, learning activities, physical spaces and student services.

SCOTT BELLMAN currently serves as program manager at DO-IT, where he has worked for 12 years. His interests include the career development of students with disabilities and access to challenging postsecondary programs and careers. Scott attended the University of Iowa, where he received a master's degree in vocational rehabilitation counseling and a degree in psychology.

from a recent panel, followed by information about program outcomes and replication.

First, panelists were asked to share information about themselves. Their responses reveal the wide variety of disabilities and academic interests of the DO-IT Scholars.

- I am blind in the left half of both eyes. I attend community college. I am about halfway done with an associate of arts degree in special education.
- I have a form of muscular dystrophy. And I just graduated from high school and I plan on attending a four-year university in the fall. My major is undecided.
- I have Asperger's syndrome … I find things socially awkward. I'm currently somewhere in between junior and sophomore at a four-year university. I would actually like to get a job in the information technology or computer design field.
- I have a learning disability. By going to this camp I learned not to fear talking about my disability and how to deal with it. I go to community college. I'm more than halfway finished with my degree. I would like to transfer to the University of Washington.
- I have a form of muscular dystrophy. Right now I'm a sophomore at the University of Washington. I am still figuring out a major. I think some day I want to work at Microsoft to work in an area like accessible technology.
- I have orthographic dysgraphia, which is a writing and reading disability. I'm going to a four-year university to major in political science and public relations.
- I have a neuromuscular disease. I am a sophomore at a university in Utah. And I am also majoring in public relations.
- I have dyslexia and attention deficit disorder. I'm going to community college and I want to go into the mental health field, I think. Right now I do.
- Mine's a long list. I'm hard of hearing, I have a vision impairment. I have cerebral palsy. I am currently a freshman at a community college. I would like to create a program similar to DO-IT, for younger kids.
- I have dyspraxia. It's a learning disability. I'm currently a student at a community college and I am pursuing a career as a park ranger.
- I have cerebral palsy. I currently attend community college and I would like to transfer to a four-year university. I plan to double major in criminal justice and forensic pathology.
- I have a spinal injury. In the fall I plan on moving to Florida and studying computer animation.
- I have autism. When I perform in the orchestras and bands, people think I don't have any disabilities at all. I fit I fit just right in. I will be attending a four-year university as a music percussion performance major. And as you might have heard, yes, I was the valedictorian of my senior class.
- (using a talking computer) I have cerebral palsy and a mild hearing loss. I use technology to communicate. Camps like this force me to be creative with dealing with communication predicaments, which gives pretty good training. I go to a community college. I'm training to be a part-time paralegal.

DO-IT Scholars learn about engineering concepts by working with graduate students in a lab.

An audience member, who was a first-year Scholar at the time, asked, "What is the hardest thing about being a first-year Scholar?" Responses included those that follow.

- The hardest part for me was being away from home for an extended period of time. You know, camp is two weeks and that was something I have never done before and, you know, it really helped me learn how to be more independent–how to be more self-reliant. I learned how I react to things and how to go about my day and plan on my own.
- I was a little nervous about interacting with other people with disabilities. I was the only one in my high school that had an apparent disability, and I was in mainstream classes, so I was a little nervous my first year as a Scholar, thinking 'Oh, are they going to be really weird'? or 'Are they going to want to talk to me'? and, you know, those kind of things. But everyone was so great–they still are. They're so great- some of my best friends. So just put yourself out there and you'll have a lot of fun. You have to be willing to take chances.

Then, an audience member asked, "When was the last time somebody just kind of, you know, burst your bubble, did something rude or stupid and it affected you? What happened and how did you deal with it?" Responses included the following.

- My freshman year, the first day of high school, I had to go into my honors English class and since I have a writing disability I

The DO-IT Scholars spend part of their day in a computer lab on the University of Washington campus, complete with all of the assistive technology they need to fully participate in the program.

was using an old talking device like a low grade word processor and I had to carry it around in an ugly briefcase and it was really noticeable and everyone asked what it was. This was before DO-IT, so I didn't have my DO-IT laptop. I told my teacher that I had a writing disability and stuff, but when I first took the device out, he told me in front of the entire class if I was lying to him I would get into big trouble. It was embarrassing- I didn't know anyone and it was the first day of high school for me. I still don't care for that teacher very much and so… yeah- but a lot of kids don't! (laughter) So it's okay. My disability is invisible. People don't always believe that I have a disability. And so for me it is not so much persuading people my age, but persuading adults. They have the hardest time believing that I actually have a disability.

- When I was younger, my sister who is three years older than me was a defender for me. And, of course when bad or rude things would happen to me, my sister would stick up for me. I would usually talk to my family. I would receive some tips from them on how to deal with each dilemma. Now that I'm older, I realize that my parents and my sister who I love very much aren't going to be there in these moments- I will have to deal with the situation myself and see the problem positively, not negatively. So that is how I try to deal with it.
- I'm in college now, and I'm trying to figure out how I'm going to pay for everything. College is really expensive. That's been really discouraging and stressful sometimes. Going through the different systems can be incredibly difficult. But I found just being really persistent, thinking about what you want to say before you pick up that phone, because sometimes you really want to challenge them and say rude things. I rehearse. I say to myself 'Okay this is what I'm going say. I'm going to be calm'. I give myself a little time to think about it. And everything has worked out for me. I've been really fortunate with that. Just don't give up. I like this program because I learned strategies and I learned about a lot of different scholarships that to help me pay for school. One presenter I heard at Summer Study said 'The only way you're guaranteed to not get a scholarship is if you don't apply for any'.

Someone from the audience asked, "Do you have any words of wisdom for these first-year Scholars? I mean, you interns have to think back a couple years to when you first came here. What would you say? A word to the wise, what would it be?" Responses included those included below.

- When you first get into college, really make it a priority to go to Disability Services- even if you don't think you'll need accommodations! You will see DO-IT videos that talk about this, but I am talking from personal experience. The services really will help. If you ever get into trouble, you'll have a safety net you can bounce back on. And sometimes it is just little things that help out. I got a good grade in a humanities class because of an accommodation of an alternative test room, where- in the silence, the content just flowed right out of my head.
- I just would say that take advantage of everything DO-IT has to offer. You were carefully selected from a large pool of people. And when you first come here, you know, you see all these other high school students and some disabilities might look more or less severe than yours, but in the end you really do belong here.
- One thing that's important is: don't be afraid to ask for help. I remember my first year, I was using a manual wheelchair and this campus is a little hilly for that, so I had to ask people for help, just like getting up a hill. That's just one of the things that you should be comfortable asking for if you need it- help getting from place-to-place.
- Last year as part of history class, I had to do a service project. I went around to different engineering and construction classes, and talked about the Americans with Disabilities Act, universal design, and how they can do curriculum and buildings and everything more accessible to people with disabilities. That was really fun for me. Talking to people and telling them about my experience.
- Yes, I would say talking is really important. I'm a really shy person. Just talk to other scholars and get to know them better and get to know their lives and stuff.
- I've really come out of my shell in DO-IT and I encourage people to talk to everyone. Walk up to a group of people who are talking and, you know, just kind of join in and don't be afraid to do that.
- Yeah! Make friends with everyone in your group because you're going to be stuck with them for the next two years, so (laughter).

There is an abundance of anecdotal evidence regarding the impact of this activity, both on the first-year Scholar in the audience, and on the Intern Panelist. Scholars become comfortable talking with the Interns, while the interns practice speaking skills and leadership.

QUANTITATIVE DATA SUPPORTING THE EFFICACY OF THE DO-IT SCHOLARS PROGRAM

The DO-IT Scholars program, originally funded by the National Science Foundation in 1992, was institutionalized with Washington state funds in 1998. DO-IT Scholars participate in activities that lead them through critical junctures to successful college experiences and careers. Scholar progress is presented in the annual DO-IT Snapshots publication- a yearbook that highlights student goals, achievements and activities. Consult DO-IT Snapshots for details regarding the interests and progress of the DO-IT Scholars; it is located online at www.uw.edu/DO-IT/Snapshots/. The AccessSTEM/AccessComputing/DO-IT Longitudinal Transition Study (ALTS) tracks the progress toward degrees and careers of students with disabilities who had a goal of postsecondary education while in high school and received DO-IT sponsored interventions. In the ALTS study, participants are asked about educational and career pathways and outcomes, and they are asked to identify the DO-IT activities they participated in and rate the value of the activities. Reporting data is available at www.uw.edu/DO-IT/Stem/tracking4.html.

REPLICATION

DO-IT applies evidence-based practices for increasing the academic and career success of individuals with disabilities. The following materials are useful to those who wish to adapt and replicate the DO-IT Scholars program.

DO-IT Center
www.uw.edu/DO-IT/

DO-IT Scholars
www.uw.edu/DO-IT/Programs/scholar.html

Evidence-Based Practices of DO-IT website
www.uw.edu/DO-IT/Resources/research.html

A popular session during the summer program uses mathematic models to create kites with different aerodynamic properties.

How DO-IT Does It (video)
www.uw.edu/DO-IT/Video/index.php?vid=16

Creating a Transition Program for Teens: How DO-IT does it and how you can DO-IT, too (book)
www.uw.edu/DO-IT/Transition/

KNOWLEDGE BASE

The DO-IT Knowledge Base is a growing collection of hundreds of articles related to accessibility of technology, college, graduate school and careers for individuals with disabilities. This searchable resource allows users to explore a vast array of information and resources. To search the Knowledge Base, visit: www.uw.edu/DO-IT/kb.html ■

Real-Life Success

Bridging the Gap Between General Education and Special Education:

The ImPACT of Universal Design for Learning

As the author of the research-based teaching framework called T.H.E. P.A.C.T., I collaborate with and train numerous teaching staff and related services across the United States and in Canada. I have supported countless teachers – both in general education and special education – in their daily work and also in our research studies across North America. And, unfortunately, I can say that, since completing a fellowship at Johns Hopkins Hospital in 1988, many of the same problems continue to exist in education, regardless of the year on the calendar or the postal code of the location.

AGE-OLD ISSUES AND A PERSISTENT MYTH IN EDUCATION

Time and time again, staff members, in both general education and special education, attempt to cover an incredible amount of information in an unrealistic, often impossible, amount of time. This instruction is typically delivered in days filled with multiple things to do and simply not enough time in which to do them.

Staff rarely get time to collaborate to be on the same page. Because of these time constraints, they are frequently forced to take a reactive approach to instruction and differentiation, as opposed to a proactive one, often not knowing what the other person is doing. I know this because I spend a great deal of time in schools, supporting teaching staff, in days where I typically have less than 180 seconds to go to the bathroom each day! Sound familiar?

The longstanding myth in education is that learners receiving specialized services need much "different" teaching strategies than those that can be used in the classroom in order to succeed in their least restrictive environment or general education setting. The TRUTH of the matter is that the successful, research-based strategies used with our learners in special education should be used with students of all abilities, in any general education classroom.

It is also important to remember that good content does not always equal sound instruction. A vast amount of curriculum content is not delivered in "bite-sized" chunks in the classroom, nor in a language-based sequence, that best foster understanding and demonstration of knowledge that our students need, regardless of ability, in order to meet the standards. Although educational plans are in place "on paper" for our students with disabilities, teams continue to struggle with meaningful inclusion of these learners, ranging from kindergarten to high school.

The chances are that, during the brief time you have been reading this article, you have already thought of some of your very own classroom teachers and educational team members, serving learners with varying abilities, who are experiencing these same problems. In fact, you probably are too!

PHYL T. MACOMBER, M.S. ATP Author and Curriculum Strategist. President of Make A Difference, Inc. Since completing a fellowship at Johns Hopkins Hospital's Kennedy-Krieger Institute in 1988, Phyl T. Macomber has become an award-winning national speaker, author, developer, curriculum strategist, AT specialist and trainer. Phyl is a retired speech-language pathologist who, now in a leadership role, spends a significant amount of time working with a diverse population of learners - both in special education and regular education - directly mentoring and coaching school-based staff in classrooms, related service settings and learning centers. Phyl's curriculum framework, called T.H.E. P.A.C.T.™ - Technology Helps Easy & Practical Adapted Curriculum Teaching™ - is being successfully used in regular education, special education and related service settings throughout the U.S. and in Canada. Email: Phyl@AboutTHEPACT.com; Telephone: (802) 484-3537; Website: www.AboutTHEPACT.com

THE CRUCIAL MISSING PIECE

The fundamental fact is that multisensory learning techniques reach all students in any setting. This is the crucial missing piece that exists between general education and special education. Multisensory teaching needs to be used consistently in both settings!

Integrating these multisensory strategies into a system of instruction, to guarantee the principles of Universal Design for Learning in the general education classroom, is essential when making it both "doable" and "sustainable" in a jam-packed school day. At any grade level, sequencing instruction into "connect-the-dot" lessons is essential for any learner's brain to reduce cognitive load in the learning process. Using a system of instruction in the classroom assists with making this become a reality.

In addition, it is important to explicitly teach all language components in each lesson, so that we do not cut corners, in what I refer to as "drive-by" lessons, and assume knowledge of language that learners do not possess. Teaching staff sometimes need to be reminded of this, as I often see that they know their content so well, that many times they forget what it is like to "not know it."

For example, Terry Griffin, Assistant Professor at Westfield State University in Westfield, Massachusetts, describes, "Through T.H.E. P.A.C.T. framework that Phyl has authored, this four-module, research-based approach to learning does a wonderful job of making the 'too often invisible' language of all curriculum 'VISIBLE' to learners of any ability." This professor goes on to explain that, through the framework's color-coded modules of "Learn About, Read About, Write About and Talk About," students of all abilities become proficient in the key areas of language in the classroom. See image 1.

THE ESSENTIAL QUESTION

What type of impact is this really having in the trenches when bridging the gap between general education and special education?

Bridging the Gap: Real-Life Success Stories

To help answer this question, we will examine the largest, multi-district School Administrative Unit (SAU) in New Hampshire: SAU 29. So, let me now introduce you to the real-life success in Joanne Sullivan's kindergarten classroom at Benjamin Franklin Elementary School in Keene, New Hampshire, which consists of a diverse group of 20 students. This teacher has typical developing students in her classroom, as well as learners with moderate to severe developmental disabilities and students who are English language learners from China, Taiwan, Canada, Mexico, India, Pakistan and Malaysia.

Joanne explains, "My goal of meeting or exceeding the needs of every child in my class has been achieved using T.H.E. P.A.C.T. This program is designed to help all teachers create lessons that can meet the needs of learners of any ability within an inclusionary setting." This kindergarten teacher has become a master at "learning for all" at any developmental level for her students using

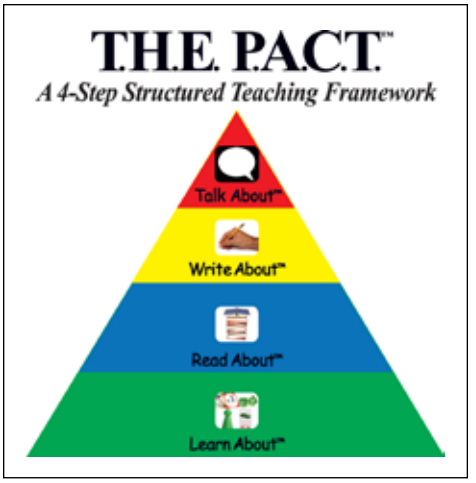

Image 1: Build Comprehension to Improve Expression

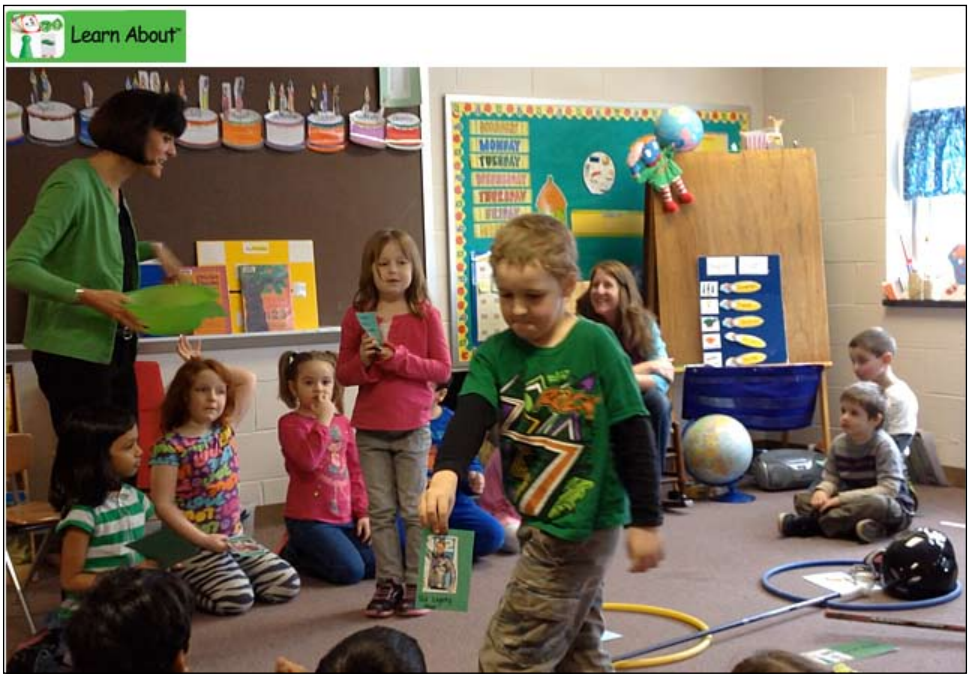

Photo 2: Explicitly Teaching Language to Learners of All Abilities in General Education

Photo 3: A UDL Blueprint for Building True Comprehension

this system of instruction. See photo 2.

Joanne truly delivers universal design for learning, in collaboration with special education staff and specialists in her building, in each of her classroom lessons, when building solid comprehension of curriculum content in the Learn About and Read About Modules of the framework, aligned to the Language and Reading Strands of the Common Core Standards. See photo 3.

This has resulted in expanding the students' expression of what they learned, in the Write About and Talk About Modules, for both the Writing Strand and Speaking and Listening Strand. Joanne, who is nominated for the 2015 New Hampshire Teacher of the Year, describes, "Using T.H.E. P.A.C.T., I have successfully taught lessons in every subject using differentiated instruction with very creative teaching techniques."

The special educator serving this kindergarten classroom, Jessica Hall, shares that she knows that her students are receiving what they need in this classroom since the teacher is using the framework related to inclusive lessons for her students with moderate to severe disabilities. Long gone are the days of this special educator "knocking on the door of regular ed" to politely ask to make an accommodation or change in the classroom instruction. The reason for this is that all of the students in the general education classroom, regardless of ability, are participating in research-based, best practice teaching formats that provide multisensory instruction using quick and easy accessible learning tools.

To further foster collaboration, Joanne also actively works with Jack Tibbons, the English Language Learner (ELL) teacher, who has been trained in the framework's foundational principles. In a co-teaching model, with the help of technology - including the new and comprehensive app system for T.H.E. P.A.C.T. - called the iPACT™ - this kindergarten class learned about different countries throughout the entire school year. See photo 4.

In sum, Joanne Sullivan's kindergarten classroom is one of the many real-life success stories of bridging the gap between general education and special education in southern New Hampshire. And, just a few miles across town is Fuller Elementary School, in this same SAU, where Cindie Bunn, first grade teacher, has mastered making her curriculum planning easier, while also providing meaningful inclusion.

From science to social studies, Cindie creatively, yet methodically, teaches her curriculum content in "Learn About, Read About, Write About and Talk About" skill-building lessons. Each student is equally included in this first grade learning community – from learners who are gifted, to those on the autism spectrum. Cindie not only completes joint planning with her special educator and instructional support staff, but also has regular dialogue with the intensive needs facilitator of the Communication Disorders Collaborative housed in this school.

This is not because Cindie has lots of time on her hands! In fact, the very opposite is true. Cindie shares that, because she is implementing consistent and predictable teaching formats using T.H.E. P.A.C.T., it is making her collaboration more streamlined. Staff members serving her classroom know her teaching formats, regardless of topic; so, when she adds novel and creative formats

Photo 4: The Delivery System of Direct Alignment to the Common Core

Photo 5: Increasing Learner Engagement with the iPACT App System

Photo 6: Using the Talk About Module to Determine Baseline Knowledge

of her choice to her system of instruction, they are kept in the loop as it relates to module assignment. From hands-on projects to iPad lessons using the iPACT, the level of learner engagement and interest is high in these "connect-the-dots" skill-building lessons - not only between the teaching staff and students, but also between the students themselves! See photo 5.

Photo 7: Kristy Symonds, Third Grade Teacher, Uses Accessible Learning Boards and the iPACT to Assure Universal Design for Learning

Photo 8: Students of All Abilities Succeed in Morris Kimura's, Fifth Grade Classroom

Another aspect of Cindie's creative teaching involves how she gains baseline information about what her students know about a curriculum topic prior to teaching the unit. At the start of each topic, this first grade teacher conducts baseline exercises in a kickoff "Talk About" lesson prior to diving into the teaching of the Learn About and Read About Modules to build comprehension. One baseline example uses a Talk About Bag, filled with curriculum images, and the classroom Talk About Board, containing the students' photos with corresponding speech bubbles.

In this assessment, students pull an image out of the bag and share what they "know" about the vocabulary item. Their sharing information is then entered into their speech bubble on the Talk About Board. Next, Cindie has the student place the vocabulary item on the classroom Learn About Board, as she labels it, while stating something like, "____ is a vocabulary word you are going to learn more about on our topic of ____." Upon completion of the Learn About, Read About and Write About modules in the instructional unit, the Talk About sharing activity is then repeated to serve as a compare and contrast of knowledge acquisition in her classroom. See photo 6.

Another school in SAU 29 in Keene, New Hampshire, is Wheelock School, where teachers are drawing a line from the Common Core Standards to each module of T.H.E. P.A.C.T. in their classroom instructional delivery. The principal, Gwen Mitchell, shared that her goal is to use the framework school-wide, K through 5, in a multi-year plan, because it is "so easy to wrap your head around" when meeting the needs of all learners in the classroom.

This principal's desire is to expand the number of classroom teachers and special education staff that are currently using the framework in this "Year-One" initiative, and reports that many of her staff are, on district-wide early release days, incorporating the four-module approach as an overall structure for their district-wide Common Core projects. See photo 7.

Principal Mitchell reports that both kindergartens, the third grade classroom, fourth grade settings and two fifth grade classrooms are, as part of this "Year-One" initiative, currently implementing this structured teaching framework within their own teaching styles in general education. In ad-

dition, speech-language services are having a greater presence in classrooms, as well as special education instructional support staff aligning their small group instruction to the framework's principles of systemized teaching. See photo 8.

THE DIRECTOR OF SPECIAL EDUCATION REPORTS THE RESULTS

To further explain the impact of this broad-based initiative in southern New Hampshire, Catherine Woods, Director of Special Education in SAU 29, sat down with me to answer key questions:

Question:

Can you please describe the differences you have seen in your multi-district school administrative unit as it relates to "Pre-PACT" and "Post-PACT" outcomes for your student population?

"Prior to using T.H.E. P.A.C.T. – "Pre-PACT" – the instructional lessons did not connect as well as they could have and were sometimes disjointed. Staff would jump in with great content; however, it was almost as if the instruction started in the middle of what they should be teaching and did not include an adequate amount of time teaching strong vocabulary skills.

"Our "Post-PACT' is a totally different story. Students of all abilities now have a richer understanding of the content they are learning because of this scaffolded teaching model. The lessons in both general education and specialized instruction are better planned, flow in an engaging way and have meaningful closure.

"The 'Post-PACT' performance of our students is showing that their confidence level is very high due to their increased comprehension of the content. Also, their overall participation in the classroom has significantly improved.

"Our students are not simply answering memorized responses to learned questions. We are not 'teaching to the test' here. Our students have successful 'strategies' to use for any topic of instruction to help them succeed."

Question:

I know that you have worked on deploying a multi-year, SAU-wide plan - K through 12 - and are continuing to expand this initiative. Now this expansion includes transitioning students into the workplace. Could you please share how T.H.E. P.A.C.T. framework has changed the planning time and delivery of instruction for both special education and regular education settings in your SAU to date?

"The immediate result of using T.H.E. P.A.C.T. framework is true collaboration between general education and special education. This framework initiative has increased co-teaching across our entire district, which has lead to more meaningful inclusion of our learners receiving specialized instruction in the general education classroom.

"Our staff are working more effectively because they are working 'smarter, not harder' – utilizing time-efficient planning using the framework's principles of incorporating consistent teaching formats and joint lesson planning to foster collaboration.

"Any teacher can have good curriculum content, but this does not necessarily assure thorough instruction. And this definitely does not guarantee Universal Design for Learning in the regular ed classroom setting.

"To sum it all up, because of T.H.E. P.A.C.T., our staff members are now having results-oriented conversations with each other about sound instruction."

RESOURCE INFORMATION:

iPACT™ App System: iTunes App Store. Available in June 2014. For more information, go to: theiPACT.com

Development Team: Mark Larson, Fio Quinn, and Phyl T. Macomber

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Friday Only - October 17	**$150**
Exhibit Hall Only - Tuesday evening through Friday, October 14-17	**$175**

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Tuesday, October 14 *(Some preconference workshops carry an additional fee for materials)*	**$275**
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PC-7 Getting Started with Writing for Students with Significant Disabilities: Mission IS Possible!

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PC-9 Advanced Proloquo2Go 4 and Proloquo4Text: Hands-On

PC-10 Upgrading Your AT Team: One-size-does-not-fit-all

PC-11 Transparency of Switch Access to AT (especially for those students with the most complex bodies)

PC-12 Communication and Literacy Learning for Girls with Rett Syndrome: Theory and Hands-On Workshop

PC-13 Accessibility in the Age of Transitioning Technologies

PC-14 Literacy and Language Instruction for Complex Learners, From Tots to Teens

PC-15 Somewhere Lost in the Middle: Serving Students who Struggle with Executive Skills, Processing, Working Memory and Retention

PC-16 Scaffolding Conversations Through Communication Circles and Social Scripts: Apps Included!

PC-17 Make Them Laugh! Making the Curriculum FUNctional

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