Assistive Technology and CVI

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What is "AT"

- "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 functional capabilities of children with disabilities." [(20 U.S.C.1401(1)]

My definition

- Any tool that reduces or eliminates a barrier for a student

Which one is AT?
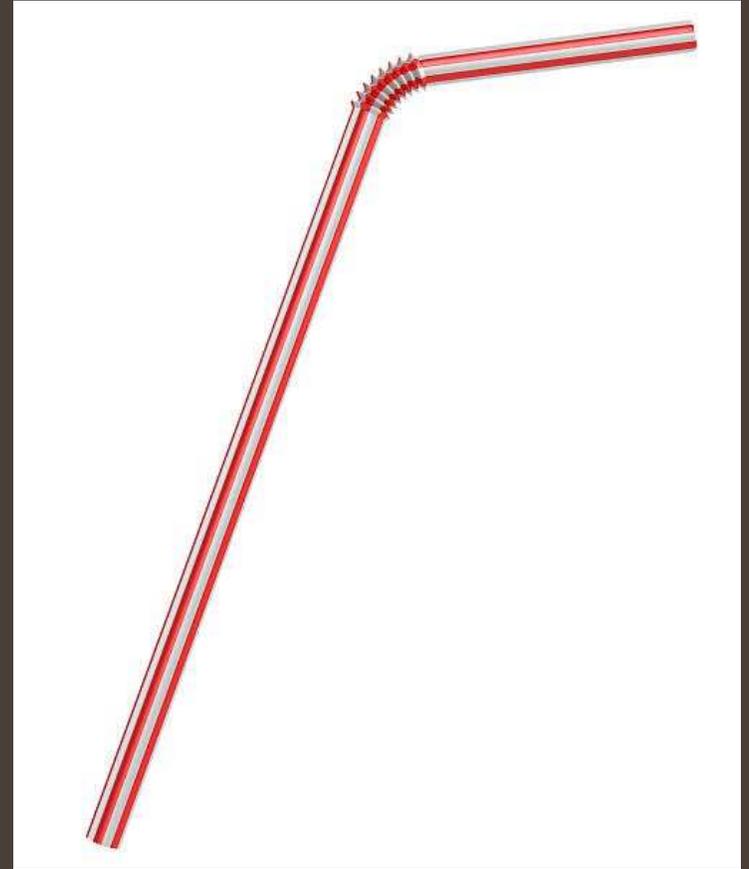
AT and the Law

- *The Individuals with Disabilities Education Act (IDEA) provides the primary guidance for assistive technology in the schools.*

- *The definition of AT is left specifically broad to allow discretion to the IEP team*

- *The only devices/tools specifically excluded under the law are surgically implanted ones*

AT and the Law

- Individualized Education Plan (IEP) teams are REQUIRED to consider assistive technology for every student on an IEP

- This includes tools needed within special education AND related services (think O&M() as well in the general education classroom and extra-curricular activities

- On a case-by-case basis schools must consider the needs of a student to have assistive technology in their home or other setting if it is necessary for that student to have a free and appropriate public education

  - "We just won't have the student do homework" is NOT an answer!!!!

- IEP teams can get caught up in the "device talk" however, IDEA clarifies that assistive technology services are central to the IEP assistive technology discussion

What is an AT Service?

- Evaluation of the needs of a child in their CUSTOMARY ENVIRONMENT

- Acquiring the AT solution

- Selecting, designing, fitting, customizing, adapting, applying, retaining, repairing or replacing AT devices

- Training and technical service to the child, the child's family, and the educational team

IT ALL STARTS WITH ASSESSMENT

AT Assessment with Learners with CVI

- Every child with CVI is so unique that a carefully planned assessment of the AT needs of the child is critical

- You can never say, "I had a student with CVI before and (fill in the blank) worked for them"

- While children with CVI are unique learners, principles that apply to assessment for all learners with VI hold true

- Assessment MUST take place in the customary environment. Before beginning the AT assessment, understand the flow of that child's day.

- While the process may be the same the barriers are different for example instead of thinking, "Does this child need large print" you may think "how can I leverage technology to reduce complexity? "

Assemble the Team

- The team should include individuals highly knowledgeable about the child's individual characteristics

- The TVI is an ESSENTIAL part of the team. Well-trained TVI's should have the content knowledge needed to guide the team.

- If the child has additional disabilities be sure to include all service providers including: SLP, OT, PT, ABA, etc.

- Remember that parents are CRITICAL members of the team. While they may not take place in the direct assessment they have critical information about the child.
  - Parent involvement is the single greatest indicator of success with technology for children with visual impairments.

The Role of the End User

- The End User (student) is the most important member of the team and often the most forgotten

- AT assessment must begin and end with the student

- Should be involved throughout the process to the greatest extent possible

- Personal preference matters!

- From a young age children with CVI need to be empowered through self-determination
    - The dignity of risk is a human right

- If you are a person without a visual impairment you should stay especially sensitive to the preferences of the end user and make sure to maintain a community of practice which includes adults with VI and CVI more specifically.

SETT Framework

- Define the problem and consider assistive technology

- Gather relevant data

- Generate potential solutions

- Conduct AT trials

- Integrate successful tools and strategies

SETT

- S= Student
- E= Environment
- T= Task
- T= Tool

Student

- What are the individual characteristics of this person?

- What are their strengths and what are their needed areas of support?

- Consider gross and fine motor, speech, social and emotional needs, multiple intelligences, vision, hearing

- What do they love, what motivates them?

- What experience do they have with technology?

- Have they demonstrated problem solving skills?

Student

- What is the strongest visual field?
- How does distance viewing affect the student?
- What does complexity do the student's ability to attend?
- Does contrast or color make a difference?
- Can the child integrate motor planning with vision?
- How well does the child handle new materials?
- How does light impact the student?
- How does movement impact the student?
- Is there visual latency present and if so, what reduces the latency?

Environment

- Before I start the AT evaluation process, I like the team to have a fairly good idea of what the child's schedule will be.
  - What times of the day are they engaged in activities with same-age peers?
    What times of the day is the child receiving instruction in a separate space?
  - What other times of the day is the child out of the classroom feeding, changing, etc.?

- What are the environments the child is learning in and what are the conditions the child is operating within AT THE TIME THE CHILD IS THERE

- AT doesn't solve all the environmental issues! First, what can we do to set up the environment for success? Do we need the disco ball and rock music during snack time?

- Environment also includes the people! What people does the child interact with on a daily basis? Who is responsible for that child's programming? What is their competency in this area? What kind of training might they require in assistive technology.

- Think infrastructure

Tasks

- Do a task analysis of the child's day, what are the activities the child needs to participate in?

- What is the child's current workflow?
  - What are the current tools, adaptations, modifications? Are they working? Is there a reasonable level of independence?

- What barriers exist and where do they exist?

- Where are tasks similar and where are they distinct?

Consider the Tasks That are Creating Barriers

- You must look at both the Core Curriculum and the Expanded Core Curriculum

- What tasks take significantly longer than sighted peers

- Do not forget to consider tasks that a child is technically completing BUT WITH A LOT OF ADULT SUPPORT
  - This is not independence!
  - "They will do it when they get older" is not a good excuse! Students will not have the prerequisite skills they need to complete that task later.
  - We cannot wait for a child's visual functioning to improve to integrate them into their day.

Match Student Needs with Tech and Trial

- This is the point at which you start talking tools. Not before!

- Learning Media Assessment and CVI assessment are critical at this point. Understand your student's sensory learning channels and how they relate to different environments across their day.

- Once appropriate tool types are identified a minimum of two examples should be prepared for trialing.

- When trialing technology do it with tasks that are below the child's ability level whenever possible.

- Not having access to technology in-district is not an excuse!

Tools

- What tools can assist with barriers?

- Are current tools sufficient with training or modifications?

- Is there a continuum of tools in place (low, mid, high tech?).

Consider Both Current and Future Needs

- We want to create a roadmap for our students, we need to consider where they are now but also project into adulthood.

- We want to keep students on pace with peers

A Few Final Thoughts

- The SETT is NOT prescriptive. The SETT does require a process but does not dictate a process.

- Use the forms that work best for you and move through them in the way that works best for you. However, "tool talk" always comes last.

- SETT is never complete. You SETT and then Re-SETT.

Remember!

- There is no "magic wand" tool that will solve all the problems. Students with CVI need a tool-kit of tools and strategies, like any other child with a visual impairment.

- There is no "right" process for conducting an assistive technology assessment. The process I have laid out is a suggestion. Every team needs to come up with what works for them.

When in doubt

- Review the [Quality Indicators for Assistive Technology](#)

Two Mini Examples

In a comprehensive AT assessment we would consider all activities throughout the day. In this case, we will look at one task to illuminate how to use the SETT to meet the needs of students with CVI.

Rachel

Student	Environment	Task	Tool
Rachel is a charismatic preschool student who loves school and has a great relationship with her paraprofessional and teacher.

Rachel has spastic quadriplegia from cerebral palsy and has very little volitional movement. The team feels Rachel has strong receptive language but cannot produce speech. She does vocalize to communicate with adults and people who know her well can interpret the vocalizations.

Rachel has been scored on the CVI range and has a score of 2.5-3. Her strongest field is her upper right and light and the color yellow are very stimulating for her vision. Rachel cannot see stimuli beyond two feet. | Rachel spends most of her day in her mainstream classroom with her peers. She is only inconsistently able to access her vision in the mainstream classroom although there is a special workspace set up for her that is appropriately adapted when Rachel needs to access her visual channel for learning.

Rachel's classroom teacher and paraprofessional are very skilled in the area of CVI and understand her visual needs clearly.

During morning meeting, students sit together in a circle on the floor. The teacher has made great effort to decrease complexity in the circle time area but Rachel struggles to use her vision during this activity. | Every morning the students are asked to pick a description of how they are feeling from the "feeling wall" and the teacher places that feeling next to the child's name. Currently, the paraprofessional, who knows Rachel well, guesses how she is feeling based on her behavior and places the feeling next to Rachel's name. | Rachel Is able to vocalize so the teacher of the visually impaired and speech and language pathologist work tougher to set up a voice activated switch for Rachel. The switch is mounted to a black piece of felt on her wheelchair and positioned so it is in her upper right field one foot from her face. When Rachel vocalizes to indicate her selection, a yellow light flashes and the switch says, "That's the one!"

Now the teacher reads off that day's feeling words slowly to Rachel and allows for processing time. When Rachel hears the feeling word she wants to choose, she uses her voice to activate the switch. Rachel's teacher then takes the feeling word and places it next to Rachel's name. |

Samuel

Student	Environment	Task	Tool
Samuel is an inquisitive and passionate 5th grade student. He loves everything about school and does well.

Samuel has CVI and struggles in novel environments or environments with significant sensory complexity. He loves to read but struggles with keeping his place in what he is reading and can sometimes become frustrated. He also struggles to read when the classroom is noisy.

Samuel is very aware of his differences from peers and does not like to leave the classroom to access any of his learning. When he does he feels self-conscious and anxious. | Samuel spends 100% of his day in his mainstream classroom. His teacher understands his needs and makes sure to adapt materials for Samuel to help reduce visual complexity.

Once a day students take turns sitting in the reading nook, reading for 10 minutes. While students take turns, other members of the class are doing catch up work. While students are encouraged to be quiet during this time, it is a typical fifth grade classroom and things can get a bit noisy. | Every day, students are asked to read for ten minutes in the "reading nook" from a 5th grade novel they have chosen from the library.

Samuel loves to read but has a hard time following the text visually as the words have gotten smaller and pages more crowded. Especially when people are talking in the classroom.

When this happens Samuel tend to get up and wander and sometimes has to stay after school to make up his reading time. | Samuel's teacher of the visually impaired works with the school team to purchase an iPad. She signs Samuel up for Bookshare and downloads the Voice Dream Reader app. She works with Samuel to set his preferred font and color settings and turns on word highlighting. Samuel uses the text to speech voice for audio assisted reading with noise cancelling headphones.

He reads visually but having the audio support makes it so that he loses his place less often and the noise-cancelling headphones make it so he feels less frustrated when peers are talking. |

AT to Consider with Children with CVI (Not exhaustive!)

- Electronic Magnification (near and distance/handheld and desktop)
  - Isolate complex images or arrays
  - Backlight
  - Positioning

- iPads
  - Apps for reading, adapting materials, adapted workflows
  - Backlight
  - Positioning
  - Auditory support

- Screen magnification and screen reading
  - Isolate parts of the computer screen use auditory support
  - Dolphin Guide is worth considering for some students

- Head-mounted magnification

AT to Consider with Children with CVI (Not exhaustive!)- continued

- E-readers
- AAC devices (make sure the TVI is involved!!!)
- Positioning Mounts
- Word Processor
- GPS
- Switches and switch interfaces
- Clicker Software

And Don't Forget the Low Tech!

- Acetate Sheets

- Line Reading Guide

- Alternative Pencils

- Slant Board

- Bar Magnifier

- Clip on light

- And so much more..........

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