

Effective Access to Communication for Students with Visual and Multiple Disabilities

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About me...

- Teacher of the Visually Impaired
- Certified Orientation and Mobility Specialist
- Itinerant Teacher for 18 years
- Currently a TVI/COMS in the Madison Elementary School District
- Students with visual impairments and multiple disabilities are my passion

Topics for today:

- Problems VI users have in accessing line-based symbol systems
- Using the child's primary learning medium to select the right type of symbols
- Special issues VI students have in accessing high-tech AAC systems
- How to implement and use assistive tools correctly with VI students

Communication is...

- A basic right for ALL
- Challenging if you can't use conventional systems
 - Speech to convey a message
 - Words & text to make a message permanent

Visual Issues are Widespread

- A large percentage of children with multiple disabilities are visually impaired
- “Over 40% of the brain is devoted to visual function, so it is not surprising that a large portion of children with damage to the brain have visual problems.” *

* Dr. Christine Roman-Lantzy, Cortical Visual Impairment, AFB Press, 2008, pg. 10.

Characteristics of Students with VI & MD

- Often prematurity, brain damage or other birth complications
- Visual Issues
 - often mild to moderate
 - typically combined with visual processing problems
- VI typically is not the primary disabling condition
- Complications in all areas - Cognition, Motor & Communication

Impact of Vision Loss on Learning

- Limits ability to learn incidentally from the environment
- About 80% of what children without visual impairments learn is through visual cues *
- The other senses do not fully compensate – the only other distance sense, hearing, does not give long-lasting information that can be re-examined easily

* Project IDEAL Online <http://projectidealonline.org/index.php>

Extra Challenges for Students with VI&MD

- Ultimate = print/braille & spoken language
- Most common alternate communication systems use line drawings/symbols
- Many VI&MD students struggle with seeing and processing symbols

Common Problems Using Symbols

1. Materials with symbols are visually complex
2. Seeing does not equal understanding

Problem 1 – Symbols are Complex

- The drawings can be very abstract
- The parts necessary to determine exact meaning can be very small
- 1 1/2" size typically used is usually too small
- Multiple colors can be cluttered & distracting
- Remember, students usually can't read the text label...

Required Visual Skills & Potential Overload

- Each time a message is selected the user must:
 - Remember what they want to say while...
 - Visually scan all items in the array
 - Visually discriminate each symbol
 - Locate the symbol that matches their message
 - Use visual-motor integration skills to target & select the message
 - Determine if partner understood

Problem 2 – Seeing \neq Understanding

- Seeing an image and understanding what the image represents is not the same thing
- Line drawings use abstract images to represent visually complex things
- Photos do not delineate foreground from background
- Generalization between similar items in the same set is not automatic

Cortical Visual Impairment CVI– Extra 2-D Challenges

- Flat symbols may not be accessible due to visual processing issues
- Photos or symbols are not recommended for children with a CVI Range score less than 6 due to visual processing issues *

* Dr. Christine Roman-Lantzy, Cortical Visual Impairment, AFB Press, 2008, pg. 136.

It should not be surprising that many VI&MD students fail when using typical line-based symbols

**The key is selecting
the RIGHT type of
symbols for each
VI&MD student**

Start with the Student's Learning Medium

- Learning Medium = what sensory channel is used for learning
 - Vision, tactile, auditory
- Usually a primary and secondary medium – determined by TVI
- Learning Medium determines the **type** of symbol system that the student can access
- TVI and Speech must work together

Match Learning Medium to the right Symbol System

The type of symbols used must be accessible – i.e. must match the way the student learns

- Visual Systems
- Auditory Systems
- Tactile Systems

Modify Symbols by

- Level of abstraction
- Complexity of vocabulary
 - Scope
 - Phrase vs word
- Organizational Method
 - Complexity of arrays

Characteristics of Visual Learners

- Use vision first
- May have odd head positions
- May respond to items at near only
- May or may not use vision and reach at the same time
- May have problems processing and understanding visual info they can see

Visual Learners – Continuum of Symbols

- Objects
- Parts of objects accessed visually
- Photographs
- Photos or symbols with simplified or enhanced elements (Visually Enhanced Symbols)
- Line drawings
- Text

Modify Visual Elements for Individual Visual Needs

- Use symbols large enough to correctly discriminate – my standard is 3" square
- Size is even more important when the student has limited motor skills
- Consider lighting & glare
 - Check glare at kid's eye level
 - Reposition materials/student
 - Glare from laminating film
 - CRITICAL for computer/device screens

Simplify Visual Elements

- Use extra spacing
- Reduce number of symbols shown
- Use black backgrounds
 - reduce clutter & increase focus
- Try different total number of symbols and arrays

Reduce Abstraction -Visually Enhanced Symbols

- Symbols or photos can be modified to enhance certain elements
- Take out the text
- Simplify/highlight elements
- Reduce # of colors used
- Boardmaker - High Contrast Symbol Library

Reduce Abstraction – Partial Object Symbols

- A 3-D symbolic system accessed visually
- Use parts of real objects not miniatures
- Increase visual features
- Typically hand-made
- Use for communication and literacy NOT JUST for schedules

Increase Level of Abstraction Over Time

- Students can develop new visual skills over time
- Transition to more abstract visual representations is possible over the long term

Examples of Visual Systems

Characteristics of Tactile Learners

- Use hands to feel things
- May use mouth and feet also
- May or may not connect objects with related events
- Tactile discrimination is a skill requiring fine motor control

Tactile Learners – Continuum of Symbols

- Single whole object
- Multiple objects
- Partial Object Symbols – pieces of actual objects NOT mini objects
- Arbitrary Tactile Symbols
- Tactile Signing or Braille

Challenges with tactile symbols for verbs, adjectives, & common “chat” language mean an auditory system may be needed

Modifications to Reduce Tactual Abstraction

- Individualize tactile symbols based on student preferences and characteristics
- Add auditory feedback
- Reduce array of symbols shown at once
- Use for Communication & Literacy
 - not just for a schedule

Examples of Tactile Systems

Characteristics of Auditory Learners

- Primarily listen to gather info
- Often receptive understanding is higher than expressive skills
- May love music & vocal play
- Often have trouble filtering out important auditory info from “background” sounds

Auditory Learners – A Continuum of Symbols

- Pre-symbolic communication – gestures, sounds, expressions
- Spoken Language
- ???

How does an auditory learner indicate their selection?

- Two switch auditory step scanning
 - With or without visual feedback from the screen
- Partner Assisted Scanning
 - The partner speaks items in a list format
 - The user selects an item from the list by saying YES or NO

Modifications to Support Auditory Learners

- Even more modeling and practice/ experience time will be needed
- Use the secondary medium combined with auditory feedback
- Partner Assisted Scanning – use an auditory PODD to keep language organized in the same way
- Simplified scanning with a step-by-step

Examples of Auditory Systems

Special Issues when VI&MD Students Access High-Tech AAC Systems

Issues with Visual AAC Systems

- Issue: Screen linking makes learning the pathway to locating a specific icon hard
- Solution: Use a printed PODD during instruction

Issues with Visual AAC Systems

- Problem – Is the student exploring or saying something?
- Solution –
 - Expect lots of exploration
 - Model use of the student's device exactly the way the student does it

My Goal: 50% adult model, 50% student use

Issues with Visual AAC Systems

- Be cautious of devices marketed to students with VI&MD
- Solution: Allow plenty of time for trials & involve the entire team in all steps of AAC selection
 - Type of symbol system
 - Vocab needed
 - Specific device
 - Implementation

Issues with High Tech Eye Gaze AAC Systems

- High tech eye gaze is possible
- Visual and ocular-motor skills requirement is high
- Reduction in visual complexity is needed
- Differences in eye gaze read by a person vs a camera – result in very different visual arrays that are needed

Issues with Tactile AAC Systems

- Problem: There are limited devices pairing tactile symbols with voice output
- Solution: Try the Logan ProxTalker or ProxPad, a CheapTalk or similar device without linking

Other Problems with Tactile AAC Systems

- Tactile symbols make linking difficult
- Limitations in array (4 or fewer at once) may make accessing a tactile system hard
- Changing the location of symbols limits motor memory, a key component of fluency with a system

Effective Alternatives to Tactile AAC Systems

Potential Solution: Use two switch auditory step scanning, especially if a larger vocabulary is needed

This is effective if the student's learning medium is primarily tactile with auditory as a secondary medium

Implementing an AAC System Effectively with Students Who Have VI&MD's

Use Assistive Tools Correctly for VI Needs

- Classroom AT tools need to be implemented differently for MD/VI students
- Individual visual functioning must be considered for each student – TVI's area of expertise
- Visual and motor needs are hard to separate – coordinate with TVI, SLP, OT, and PT

Appropriate placement & positioning are critical for success

- Consider visual field/functional vision along with physical access needs
- VMI challenges complicates access
- The head may be best for switch access - visual input is not always needed
- Make the best spot permanent – loc-line & Velcro cable ties help
- Using the same spot supports motor memory & increases fluency

Permanent Switch Location Example

More Implementation Tips

- Try tools that support direct access
- Give LOTS of extra processing time
- Your body adds visual complexity
 - Clothes, Jewelry & Gestures
- Model how to use devices the same way the student does – use the same access/learning medium

How to Support Language Acquisition

- Model light and high tech systems every time
- Show the location of vocabulary they may need before a lesson
- Give the student TIME to explore and use their system in a meaningful manner
- Give the student meaningful feedback after they select a message

Modifying the Environment to Support VI Access

- SIMPLIFY VISUAL CLUTTER
- Use background backgrounds & desk top occluders

More Environmental Modifications

- Consider position related to lighting & glare – particularly for non-mobile students
- Reduce extraneous noise
- Make it easier for staff

Summary

- Use the student's learning medium to choose the appropriate symbolic system for communication
- Modify the symbol system to maximize individual access
- Implement AAC devices using techniques that support success in VI&MD students

Faye's Webinars Through Perkins E-Learning

<http://www.perkinselearning.org/>

Watch webinars at Perkins free of charge

- [Link to - Effective Access to Communication and Literacy for Students with Visual and Multiple Disabilities](#)
- [Link to - Sensory Activities: Experiences to Improve Communication and Literacy for Children with Visual and Multiple Disabilities](#)



Faye's Blogs at Paths to Literacy

<http://www.pathstoliteracy.org/>

- Making Writing Meaningful Using Real Activities and PowerPoint

<http://www.pathstoliteracy.org/making-writing-meaningful>

- Top 10 Tips for Working with Students Who Have Multiple Disabilities and Visual Impairments

<http://www.pathstoliteracy.org/top-10-tips-working-students-who-have-multiple-disabilities-and-visual-impairments>

- Augmentative and Alternative Communication (AAC) Systems for Students with CVI and Multiple Disabilities

<http://www.pathstoliteracy.org/augmentative-and-alternative-communication-aac-systems-students-cvi-multiple-disabilities>



Questions?

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