Effective Access to Communication for Students with Visual and Multiple Disabilities

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July 13, 2015
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.” *

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 ≠ 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 *

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
• ???

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July 2015
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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