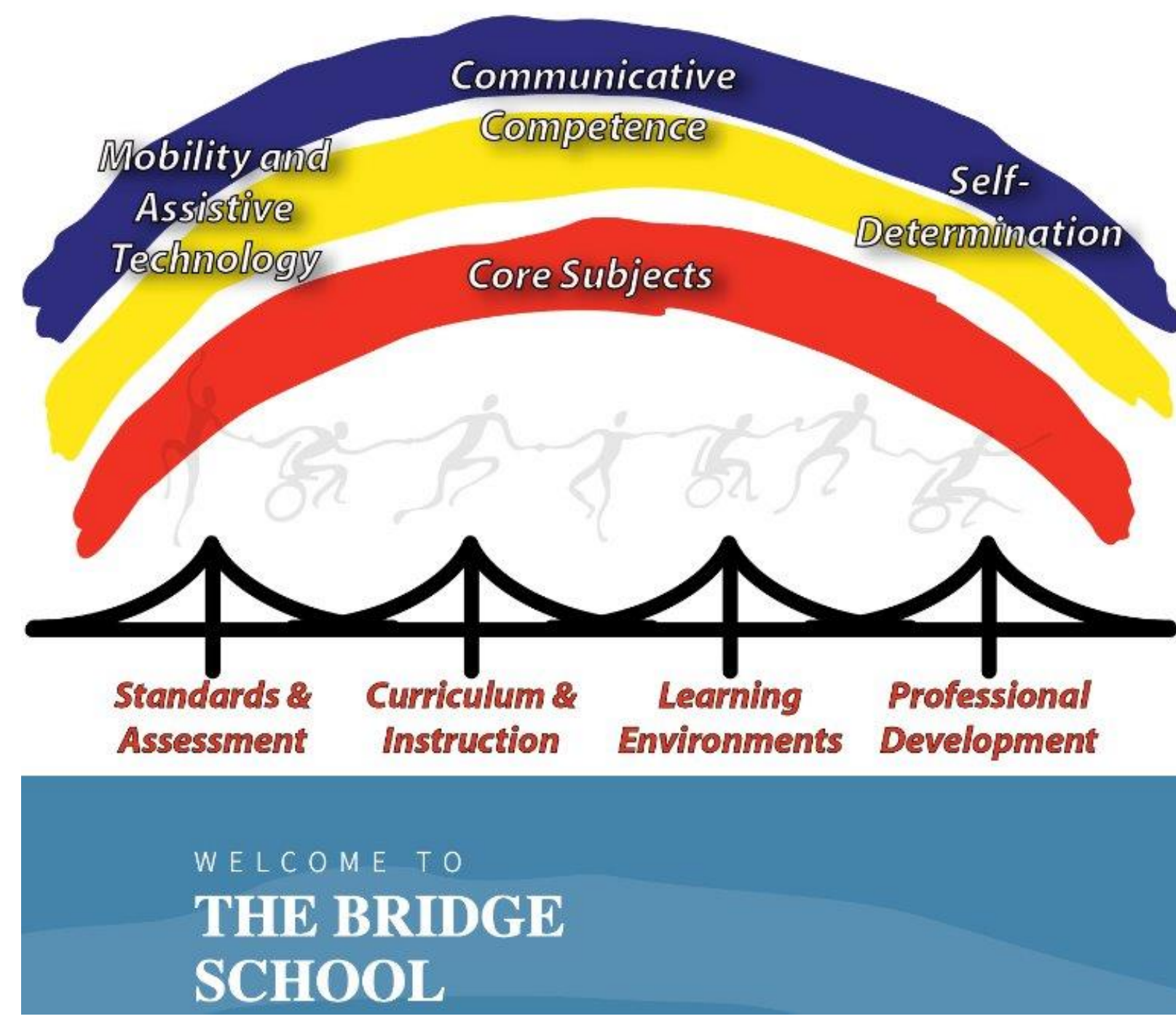


Nurturing Growth: Collaborative Interventions for Students with CVI and AAC Needs

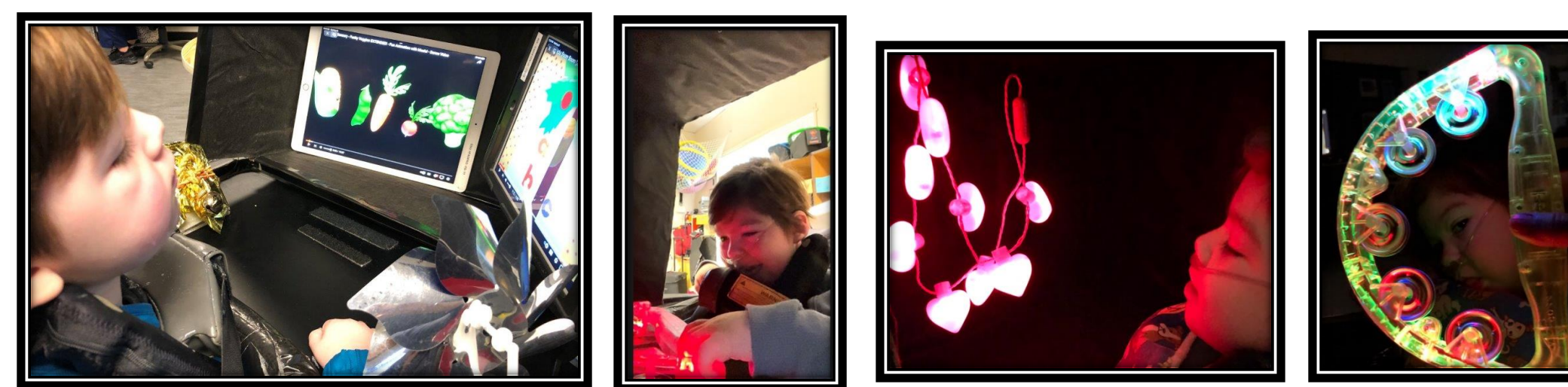
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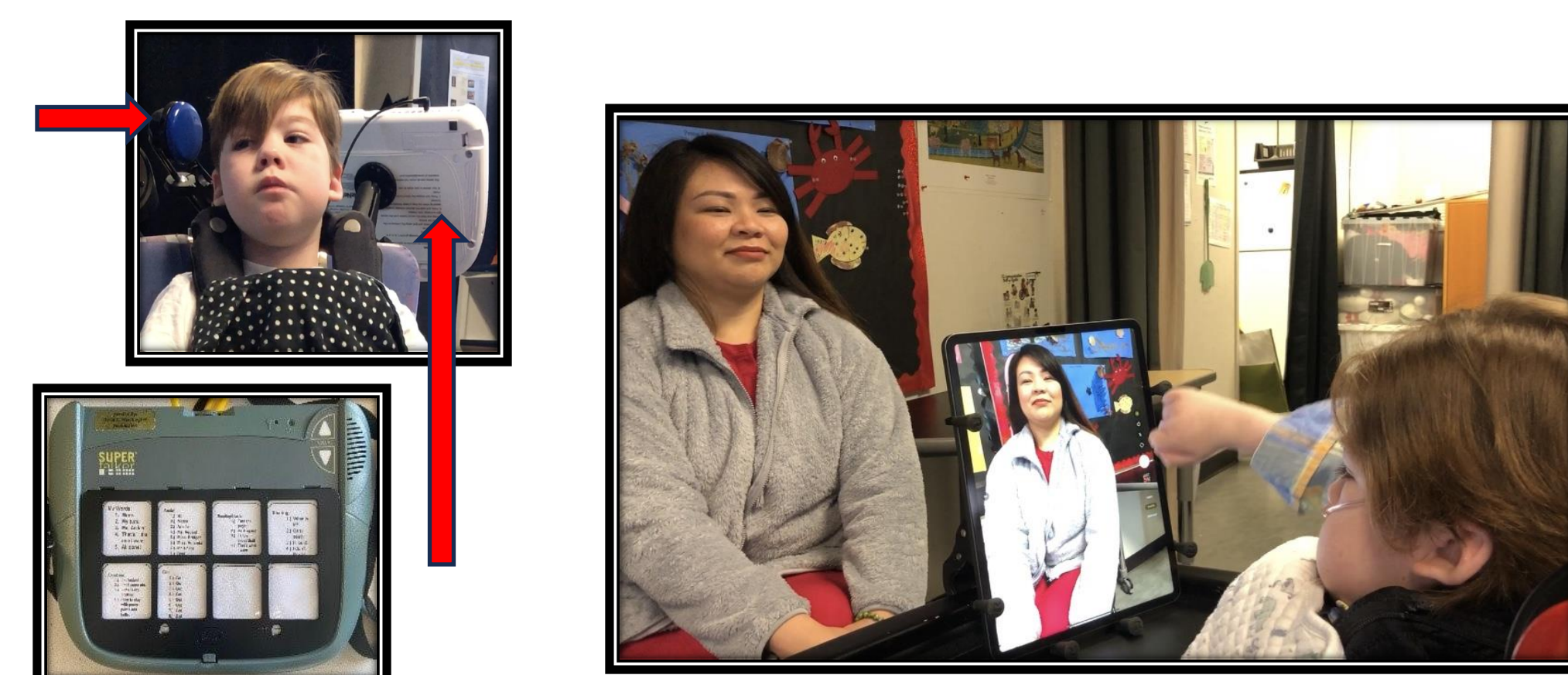
Collaboration is indispensable in designing interventions for students with extensive support needs who present with Cerebral/Cortical Visual Impairment and use Augmentative and Alternative Communication.

This poster provides an adapted version of the *Augmentative and Alternative Communication System Considerations for Individuals with Cortical Visual Impairment* framework (Wilkinson, K. M., Elko, L. R., Elko, E., McCarty, T. V., Sowers, D., 2023.) as a tool to gather targeted interventions and provide information for collaborative goal setting for sustained language and educational growth.

AAC+CVI Characteristics of the Individual	
Physical & emotional well-being:	Age 7. Likes to listen to musical toys and videos and use his sense of smell. Diagnoses: TUBA 1A gene mutation, micro lissencephaly, seizure disorder. Requires full time nurse for medication, and oxygen. Medication affects alertness and best time for instruction is 10:30-11:30 and 1:00-2:00.
Receptive & expressive language	Vocalizes and smiles when he hears familiar voices and preferred songs (Communication Matrix: Level 3). Cries in reaction to physical and environmental stimulus. Does not identify objects or photos.
Level of functional vision	CVI Range 3.5-4.0. Phase I. Building visual behaviors, beginning to alternate his gaze left and right given two iPads with bright videos.
Visual motor integration	Look and reach occur as separate events.
Use of auditory cues	Smiles when he hears songs & familiar voices. Quiet structured routines best for using vision. Busy environments can increase seizures. Auditory cues are presented for objects to support comprehension.

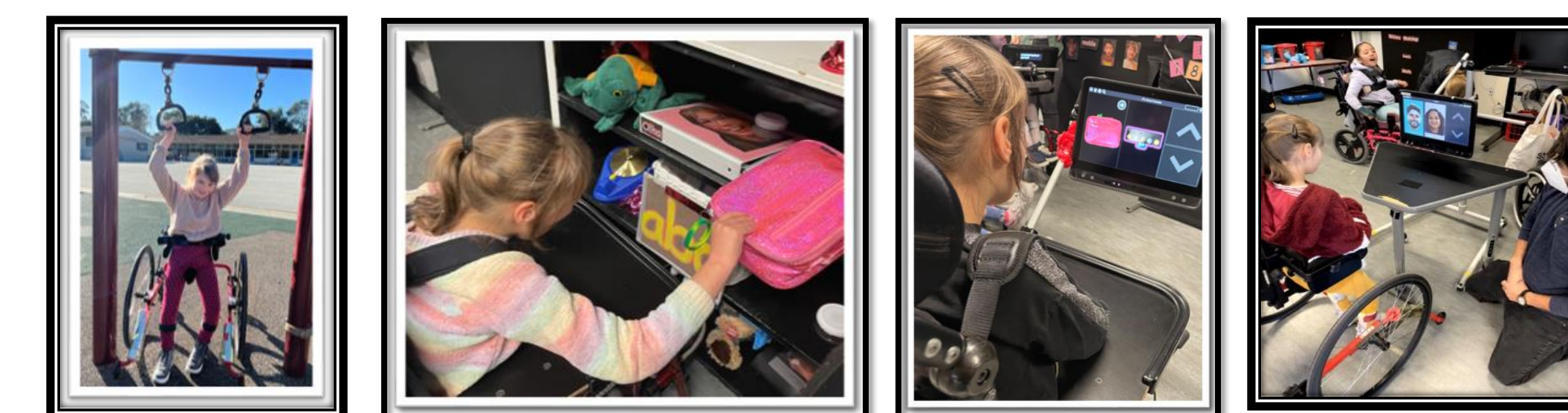


AAC+CVI Responsibilities of the Communication Partner	
Manage environmental complexity	Demonstrates visual and auditory attention in no to low volume environments with minimal competing auditory input. Visual attention increases in dimly lit, dark work-stations. Partner training necessary.
Consider placement in visual field	Looks at moving brightly, colored, visual stimulus paired with light in his left, right, and mid visual fields.
Consider distance of AAC materials	Visually responds to material positioned within 12-18 inches.
Consider use of movement	Only looks at visual targets that are moving or have properties of movement (e.g. mirrored, mylar).
Provide wait time and visual breaks	May require wait times up to 30-40 seconds. Health and medication impact visual attention. Requires verbal and gestural prompts. Will "turn off" vision when tired.



AAC+CVI Features of AAC Design	
Complexity of stimulus & array	Uses a switch to access single phrases on light to mid-tech AAC devices. Only looks at 2-D images that are moving. Is not currently identifying/interpreting objects and images. Auditory scanning is critical for him.
Symbol characteristics	Making errorless choices with real objects.
Display characteristics	Only looks at back lit screens paired with highly saturated colored moving images.
Navigation & operation	Requires verbal and physical prompts to use a single switch to access recorded phrases & messages in routines.
Seating and positioning	Wheelchair provides head support and access to a single switch at his temple. Use of a wheelchair tray positions his iPads for optimal viewing and gives him something to lean on for upper trunk support.

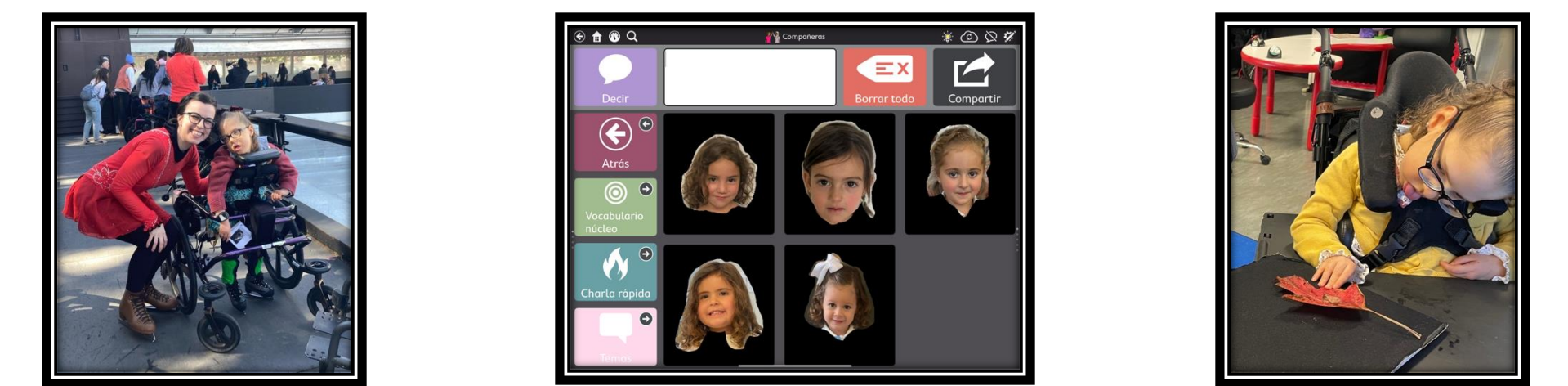
AAC+CVI Characteristics of the Individual	
Physical & emotional well-being:	Age 10. Loves music, movies, & mealtimes. Diagnoses: BRAT 1, seizure disorder. Needs position changes & opportunities to access people & materials. May put her head down if she remains seated. Partners need to note fatigue levels.
Receptive & expressive language	Demonstrates understanding of familiar objects & photos by selecting item named from choice of 2 (C-BiLLT). Uses unconventional & conventional communication behaviors (Communication Matrix Level 4). Makes choices & expresses preferences in a controlled environment from 6 familiar pictures.
Level of functional vision	CVI Range Score 6.0- 7.0, Phase II Integrating vision with function.
Visual motor integration	Does not consistently look & reach simultaneously. Uses one modality at a time.
Use of auditory cues	Turns to listen, smiles when partners greet her and use targeted phrases, sentences & directions in daily social & educational routines.



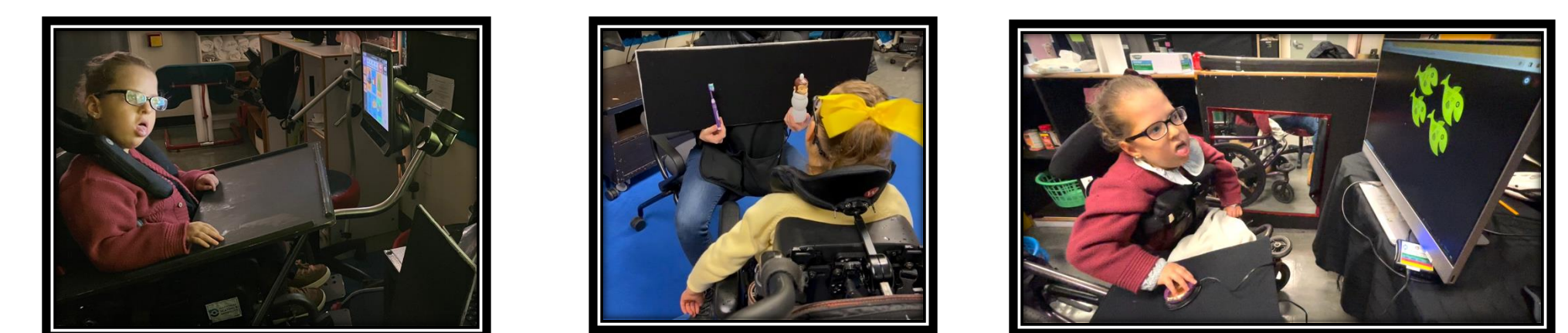
AAC+CVI Responsibilities of the Communication Partner	
Manage environmental complexity	Best vision in low volume, minimal movement environments. When tired or with 3+ people who are talking & moving, use black or backlit backgrounds. Movement, color & light support simultaneous look and reach. Consistent highly scripted routines (e.g. steps of a task, consistent language to describe objects) support her developing object /symbol identification. Partner training necessary.
Consider placement in visual field	Has a left side visual preference but is increasingly using right & mid fields with familiar partners & in routine activities.
Consider distance of AAC materials	Optimal location for visual targets is within 1-3 feet. Partners need training to set up wheelchair & floor mounts & secure AAC tools when she is positioned correctly in her wheelchair & in her walker.
Consider use of movement	Movement of visual targets unnecessary when presented within 1-3 ft. Requires movement at distances of 3-6 ft (shaking targets &/or incorporating material mimicking movement like mirrors, shiny mylar tape).
Provide wait time and Visual Breaks	Visual response is instantaneous only when items are moving or when highly motivating visual targets are presented (e.g. cake). Typically, wait time between 10-20 seconds required. Visual breaks required when fatigued.

AAC+CVI Features of AAC Design	
Complexity of stimulus & array	Objects or photos can have 3-4 colors. Add mylar tape to draw attention to new objects. Present new objects against black backgrounds. 2-3 photos can be presented in moderate sensory environments; 4-6 photos in low sensory environments.
Symbol characteristics	Large sized high-quality photos of objects (learned in routines) cropped to remove background. Introduced Emojis & cartoon images in routines to represent a concept.
Display characteristics	Black background & backlighting are necessary. Pink, purple, yellow & red draw attention along with sparkle & glitter.
Navigation & operation	Over 3 years, learned to access people, activities in daily school schedule & personal topics (going swimming, going horseback riding) with repetition & experience.
Seating and positioning	Uses a tray for arm support, needs to be able to reach her wheels to move her chair in familiar settings. Requires access to tools & materials when positioned in her wheelchair & her hands-free support walker. Tools must be securely mounted for access, stability & safety.

AAC+CVI related Characteristics of the Individual	
Physical & emotional well-being:	Age 6. Loves music and choosing songs. Diagnoses: Spastic quadriplegic cerebral palsy, intraventricular & cerebellar hemorrhage, developmental delay. Requires rest periods during school day.
Receptive & expressive language	Demonstrates understanding of concrete symbols (Communication Matrix: Level 5). Comprehends single words related to nouns and actions, difficulty comprehending longer phrases (C-BiLLT). Using I13 Tobii Dynavox (eye-gaze) to access 1 or more messages appropriately. Maintaining and adding alternate, simpler tools (Step-by-step, printed pages, choices with objects or photos) increases her communication.
Functional vision	CVI Range: 4.25 – 5. Phase II. Beginning to integrate vision with function.
Visual motor integration	Uses her hands to access Step by Step but using her hands on communication pages with multiple locations is too difficult. Use of color helps support look and reach.
Use of auditory cues	Audition is primary learning modality. Partner Assisted Auditory Scanning (PAAS) or Partner Assisted Visual Auditory Scanning (PAVAS) support communication in complex environments and/or when visually fatigued.



AAC+CVI Responsibilities of the Communication Partner	
Manage environmental complexity	Communication best in environments with reduced clutter and noise. Offer alternate access methods and page layouts for complex environments like her inclusive school. Partner training necessary.
Consider placement in visual field	Prefers right and left fields. AAC device mounted at a slight angle. When interacting, communication partner is located on her left. Use color, light, and other supports for her lower field.
Consider distance of AAC materials	Recommended distance: 2-3 feet At 3+ feet use light, movement and other supports to gain visual attention, especially when she is in her hands-free walker.
Consider use of movement	Not needed for her AAC tools but benefits from instructional materials that incorporate movement.
Provide wait time and visual breaks	Provide quiet wait time with clear expectations. Increased latency will occur with new stimuli. Incorporate Sensory Balanced schedule with built in visual breaks.



AAC+CVI Features of AAC Design	
Complexity of stimulus & array	Pages with 4 – 6 items are easily accessible, more complex pages can be used in a more controlled setting.
Symbol characteristics	Complexity of symbol: real photographs with reduced complexity work best, followed by realistic illustrations. When possible, decrease number of colors and patterns within the symbol and remove background.
Display characteristics	Benefits from backlighting. Symbols that are visually similar should be separated.
Navigation & operation	Alternate access methods when required: Eye – gaze / PAVAS / PAAS Consistent symbol arrangement for high-frequency vocabulary.
Seating and positioning	Supportive head rest with shoulder pads allows more head movement, giving access to a wider visual field for improved vision. Black tray provides support for arms adding to trunk stability.

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Resource

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