

Key Concepts for Using Augmentative Communication with Children Who Have Complex Communication Needs

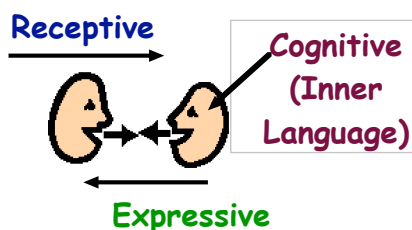
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Who Should be Using Augmentative Communication?

- Any child whose speech is not effectively meeting her communication needs
- Children recovering from traumatic brain injury who may be slow to recover speech
- Children who have complex communication needs such as:
 - Children with severe physical challenges such as Cerebral Palsy
 - Children on the Autism Spectrum
 - Girls with Rett Syndrome
 - Children who face significant multiple challenges
 - Children who are deaf/blind
 - Children who are developmentally delayed
 - Children who have significant behavior challenges related to the inability to communicate
 - Children who are Dyspraxic or Apraxic
 - No pre-requisites are needed - every child communicates

Why Use Augmentative Communication?

- Provides motivation
- Provides a purpose and intent for learning - Through play and active participation
- Improves self-concept and self esteem - Gives the child a sense of competence - which in turn, improves a child's ability to learn
- Means of expressive language
- Means of improving receptive language skills for those children with auditory processing difficulties
- Provides a means for self-talk and cognitive processing



- Facilitates speech for children who would be considered pre-verbal

- Facilitates functional and appropriate use of speech
- Makes language visible for children on the Autism Spectrum
- Reduce frustration and behavior problems
- Makes language less transient
- Makes language more concrete, provides multi-sensory input, and levels the playing field for children who are developmentally delayed
- Increases participation in daily life
- Facilitates learning by making learning active and interactive
- Means of interacting with Peers and provides a vehicle for developing social skills
- Provides support for emerging literacy and mathematical concepts

Key Components for the Successful Learning of Augmentative Communication

1. **Focus on Interaction and Communication - Not the technology**
2. **Assessment is an On-Going, Dynamic Team Process**
3. **Use Multiple Systems, Multiple Modalities, 'Light Tech' and 'High Tech'**
4. **Active Learning is Critical**
5. **Children Learn Language through Natural Immersion in Language -Input before Output - Start Young if Possible, but It's Never too Late**
6. **The 'Juggling Act' for Children who Have Significant Multiple Challenges**
7. **Motivation is Key**

Focus on Interaction and Communication - Not the technology

- People are the most important component in developing communication skills. Technology is a tool for people.
- Technology and Augmentative Communication Systems are useless in enabling children to realize their potential **without** appropriate training and a supportive environment
- It is easy to get lost in the equipment
- Acquiring the equipment is just one small step

- Focus should be on the interaction between child and adult or on the interaction between the child and other children
- Success should be measured by what the child is able to do functionally to interact and communicate more appropriately in natural contexts
- Learning to use an AAC system is challenging and may not yet have been part of a child's typical life experiences
- Therapists need to keep up to date on current available technologies and available systems for organizing vocabulary - Once size does not fit all students.

Assessment is an On-Going, Dynamic Team Process

Dynamic Assessment

- Assessment is an ongoing interactive and dynamic team process that happens over time
- Children with severe, multiple and complex challenges may need to learn specific strategies first, in order to be able to demonstrate cognitive and language understanding
- Communication strategies may need to be taught before testing (Goosens')
- Motor skills may need to be developed or refined
- Child may understand and have knowledge but not have the motor or communication skill to demonstrate it
- Therefore, standardized tests may not be helpful or really give you a clear indication of what the child knows
- Start with what the child can do successfully and build on that
- Determine the purpose or goal of a particular activity from the adult's perspective and from the child's perspective - so both know the purpose of the activity
- Intervene - Observe - Adjust Intervention - Observe (repeat)
- Provide moderate changes within a natural context and observe results
- Decide what you want to find out and what might help you find that out
- What facilitates function, and what inhibits function in each aspect of a task, such as: motor skills, vision, hearing, attention, language processing, initiation, expressive communication, interaction, motivation, problem solving, state, and sensory processing
- Adult provides supports and scaffolds to determine possibilities
- Pay close attention to child's sense of competence and feelings of control and choice within the activity
- It is easy to prove what a child can NOT do
- We need to find the spark, and fan the flames - Discover what the child can do!

SETT model: Student, Environment, Task, Tools (Zabala)

Start with the students abilities and needs

Then look at the environments and available supports in that environment

Next look at the tasks the child will need to perform in each environment

Lastly look at the features of technology: "light tech" to "high tech" needed to meet these requirements

Focus on function - not ability to use a particular device (ex: interacting with people)

Use Multiple Systems, Multiple Modalities, 'Light Tech' and 'High Tech'

The use of multiple communication systems is vastly more effective than use of a single system

- Communication System means systems
- sign language
- gestures
- picture/symbol systems
- voice-output devices
- facial expressions
- verbal approximations and vocal tonality
- eye-gaze
- The use of multiple systems is far more powerful than the use of any one system
- The definition of communication is that the listener understood the "speaker's" message and visa versa
- Use of a particular system or access strategy is dependent on the activity, the environment and communication partners at the time it is used
- People who support the child on a daily basis need to be integrally involved in the whole ongoing process: assessment, recommendations and implementation
- Team approach is critical
- Children model what they see and will learn to use a variety of systems if these are modeled for them in daily use.

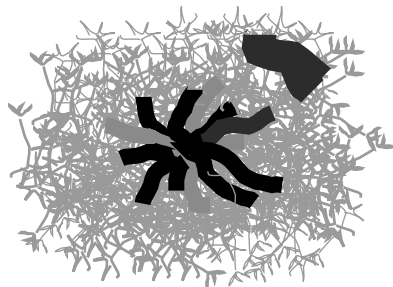
Select a comprehensive system to build upon

- Look for systems that organize language instead of offering fragmented sets of communication boards - For ex: Unity, Word Power, Gateway, PODD, TANGO, Talk Boards, Bliss, Engineered Displays, sign language systems, etc. (List is ever-growing and changing)
- Use of core words and fringe vocabulary - both are needed for functional communication
- Help children build skills within the larger context of an organized system that is consistent across all team members and spans long range application in school and home
- Avoid re-inventing the wheel every year or when the team changes

- But..... always honor the child's right to use whatever communication system works best for them in a particular situation and context
- Check out Social Networks: (Sarah Blackstone)

Use Multiple Modalities

- The child is born with billions of neurons and trillions of neurological connections
- Through experience, children learn by creating/building/expanding sets of neurological connections known as a cognitive schema and they use these cognitive schema as the basis for understanding new experiences.
- "What Fires together, Wires Together"
- Learning is the process of strengthening connections, adding connections and discarding connections based on experience (The child's cognitive schema for a particular concept is strengthened, expanded and refined)
- "Use it or Loose it!"
- Cognitive Schema represent understanding about a concept that is processed in many areas of the brain to give a rich representation of all the aspects of that concept. For example, neurological connections related to one concept may extend to areas of the brain that process: visual, auditory, tactile, kinesthetic, olfactory, gustatory, vestibular, proprioception, function, cultural considerations, context and other associated concepts.
- Once a cognitive schema is in place it operates unconsciously in the background until there is a reason to pay attention to it
- Attention to any aspect of that cognitive schema immediately gives the person access to everything connected to that concept
- Experiment with multiple modalities, presented simultaneously, sequentially or singly - based on child's responses and environmental conditions.
- Children who have normal processing build a complex network that encompasses many parts of the brain
- Children with abnormal processing or less connections to start with, may only build limited connections with fewer associations to a wide range of understandings
- Too much information coming in that doesn't make sense results in over-stimulation and that results in either: 'shutting down' or 'acting out'
- Shutting down can be a compensatory strategy to overload

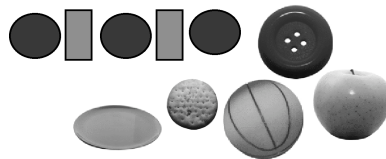


Schematic Drawing of Neurological Cognitive Schema vs. Isolated Connections

How Can You Help Children Develop Rich Cognitive Schemas?

- The brain looks for patterns and changes in patterns
- Routines become patterns
- Patterns can be: Visual, Spatial, Auditory, Tactile, Kinesthetic, Temporal, Procedural, Cognitive, Linguistic, Multi-Modal, etc.
- Patterns are learned through experience - not isolated drills
- Memory is stored as patterns, not details
- When we "See" a Difference in an Expected Pattern, We are Compelled to Attend to it and Process it!
- Learning Occurs When the Brain Compares an Incoming Pattern with an Expected Pattern and Detects a Difference
- Set up Problem Solving Opportunities
- Mistakes are an Important Part of Learning
- Help children recognize a pattern and then change it moderately to maintain attention and encourage curiosity
- Music, Rhythm, and Rhyme can be used to Emphasize Patterns
- Technology Can Emphasize Patterns and Comparisons
- Create communication displays: 'light tech' or 'high tech' that systematically arrange vocabulary, so the child can take advantage of the pattern and focus on the conversation, instead of searching for vocabulary
- Hold attention through cognitive engagement and curiosity
- Relate all activities to child's experience, knowledge base and relevance
- Teach in natural contexts
- Allow for cognitive processing time with anticipatory pauses

The brain is pre-wired to look
for patterns and make
comparisons to what is known



Repetition with Moderate Differences:

- Start with Known Information and Build Systematically
- Cause and effect learning - baby scientists
- Problem of habituation (Boredom develops with too much repetition that is not child-directed)
- Repetition is necessary for learning.
- Too much repetition can cause habituation
- Balance of Novel and Known

- Children learn by a process of gradually adding to what is known through comparisons and patterns.
- Help the child build associations and comparisons to known information
- Start with what the child understands. Patterns that make sense, and then provide repetition with moderate difference
- This taps intrinsic motivation and assists learning
- Helps the child relate new information to familiar information and build associations
- Personalize materials and use preferred items
- Set up activities for the child to use a combination of previous knowledge and trial and error to achieve success.

Active Learning is Critical

Active Participation

- Active learning is vastly more effective than passive participation.
- Children with significant challenges, may become passive learners when they have difficulty communicating, interacting and/or understanding what is going on around them.
- Sometimes these children cruise through the day as a passive passenger, never needing to pay attention to the road or even helping with navigation of where they are headed. (Guided Tour vs. Following a Map)



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- The problem is that learning is less likely to take place when the child is in a passive role.
- Children Need to See a Reason for Doing Something
- Provide adaptations and modifications to enable active participation
- Foster Initiation and Active Engagement
- Prompt Least to Most to encourage initiation and active participation
- Provide Strategic Feedback instead of Direct Prompts
- Teachers and therapists need to think outside the box and create participation opportunities within activities.
- Another key component of active learning is the child's feeling of competence. If the child feels competent, then he will more likely to engage his brain in the task at hand.

- Teachers and therapists can engineer opportunities for children to feel competent, by creating activities in which the child can easily relate his efforts to the success of the task.
- A range of assistive Technology from Velcro™ to computers can provide a means for children to accomplish physical tasks.

Engineer Choices and Control for the Child

- Active participation is increased by providing opportunities for control and making choices that will effect the child's experiences.
- Provide opportunities for control, by setting up child-directed activities and following the child's lead.
- While children can not often have control or choice about the sequence of the daily routine, there can be opportunities within routines that effect them. (For example, deciding who will be their peer buddy for an activity, selecting the book for story time, or competing with friends in an adapted game that reinforces concepts just learned in a lesson.)
- Continuously provide opportunities for making choices - enable the child to feel "In Control"
- Provide choices that matter and choices that are easy to discriminate
- Provide adapted methods of choice making for individual needs:
 - eye-gaze
 - reaching
 - pointing
 - talking switches
 - partner listing
 - two hand choices
 - touch points cues
 - etc.
- Making choices helps to increase cognitive engagement and reduce passivity
- Set up choices for who, what when, where, how, and how many - within any activity
- Provide multiple opportunities for meaningful choices throughout the day
- Engineer communication opportunities

Children Learn Language through Natural Immersion in Language -Input before Output

Children most effectively learn to use augmentative communication through the same methods that they learn to use verbal communication - through modeling in natural and functional contexts.

- Drill and practice, rote learning is not very effective for learning language
- Learning in functional situations facilitates generalization
- Anything that has some intrinsic motivation for the child is more likely to be practiced in different settings and used by the child.

Input Before Output

- Language is not learned by straight imitation, it is learned through broad experiences that provide multiple repetitions of concepts, vocabulary and conventions. This provides a scaffold from which children can construct language.
- Aided Language Stimulation (Goosens', Crain and Elder)
- Children can not be expected to know how to use something until they are given an opportunity to learn how to use it in natural contexts
- Multi-Modal Language Stimulation - information needs to go in before it comes back out
- Analogy to Foreign Language Immersion
- Modeling and a simulated immersion environment are powerful
- Receptive use of systems is critical
- Early vocabulary is first introduced receptively
- Vocabulary, communicative functions, and longer utterances just above what the child is able to express should be modeled to expand upon what the child says, and guide the child to higher language usage
- A wide variety of communicative functions need to be represented. For example:
 - initiate or call attention
 - greet
 - accept
 - reject
 - protest
 - request objects
 - share and show objects
 - request information
 - name
 - acknowledge
 - answer
 - comment on action/object
 - express feelings
 - assert independence
 - ask questions
 - share information
 - relate events
 - call attention to how things are related - similar and different
 - talk about past and future
 - negotiate and bargain
 - state opinions
 - tease
 - threaten
 - make up stories
 - express manners and consideration for others

- Utilize communication boards to point to receptively even when child is only on a picture exchange system expressively, so that the transition becomes more natural.
- Model and encourage self-talk using multi-modality supports
- Try Song books and Song Boards
- Use conversational language instead of just questioning the child ("You like that," "Your car is crashing", "That's big", "I'm going to throw the ball", etc.)
- Avoid asking too many questions, use more comments and social expressions ("that's silly", "uh oh!", "we need to clean it up.")
- When asking a question, provide a concrete way for student to respond ("Do you want chocolate or regular milk" - showing both containers or pictures for child to select from)
- Use sign language and drawings of familiar signs for receptive and expressive skills

The Juggling Act

- Working Memory can only deal with a limited amount of information at a time
- Cognitive attention is needed to focus on anything that is not automatic. When someone is first learning a task it requires conscious effort, then with repeated use and practice the brain learns to control the task automatically without much conscious thought. For example: what do you do if someone suddenly throws a ball at you? What would a baby do?
- Children with significant physical challenges, have not yet developed reliable control of movements at an automatic level, and therefore, even simple movements can be unreliable and require a great deal of cognitive energy to perform.
- Juggling means that the child may only have some of the 'components in the air' at any given time, and having all the 'components in the air' will be rare. **This explains why performance is so inconsistent and can not always be predictably repeated**
- We need to take successes and move on, as opposed to requiring repetition of the task over a given number of trials - Meaningless repetition produces boredom and habituation and thus produces inconsistent test results



Developing Automaticity

- Problem of available working memory - what to focus on?
- Getting to a point where cognitive efforts can be redirected from the motor skill to the content of the task
- Team Planning and coordination for consistency
- Practice and repetition with moderate differences and purpose

What does Research Say About What is Most Effective in Learning a Motor Task? (Adapted by Burkhart and Hanser)

- Initiation of intent from within the child - often generated in response to the environment or social context. (This is not passive participation or hand-over-hand.)
- Problem solving opportunities for trial and error and child-initiated correction or adjustment to errors.
- Practice and repetition with a purpose. (Studies show increased motor accuracy and ease when there is a purpose)
- Thousands of repetitions with variation (moderate differences)

Parallel Programming

- Agree as a team on long term direction
- Focus on one component or skill with each activity
- Reduce motor load for difficult cognitive or language tasks
- Reduce cognitive load for motor learning tasks

Motivation is Key

Work towards Mastery Motivation:

Mastery Motivation: "a psychological force that originates without the need for extrinsic reward and leads an infant or young child to attempt to master tasks for the intrinsic feeling of efficacy rather than because of recurrent reward" (Morgan, MacTurk, & Hrncir, 1995, p.6)

- Mastery Motivation is intrinsic motivation
- Children will be motivated to only do what they know they can do or assume they can do successfully - This is often interpreted by others to mean: "She only does what she wants to do."
- Withdrawal or passivity may be the child's way of protecting themselves from further failure
- Being too helpful or rewarding dependency behaviors can reduce mastery motivation and lead to learned helplessness
- Role of para-professional is to facilitate independence, active engagement, and support for problem solving

- External rewards and reinforcers can reduce mastery motivation and shift child's attention away from task toward the reinforcer. It is more effective for the activity to have relevance and intrinsic motivation.
- Given a task that is truly appreciated by, or important to, someone else, motivation is likely to be increased. (For Example: "Let me know when you see Dad drive up so we can surprise him at the door" or helping classmates review for a test through questions and interaction using a voice output device.)
- Vygotsky (1978) "zone of proximal development" (ZPD) Challenge child just above what he can do independently and provide a scaffold of supports
- Meaningful repetition within natural meaningful contexts provides active practice for developing skills. The use of natural motivation that includes variation (moderate differences) holds interest and helps child internalize a broader understanding of concepts.
- Reducing the pressure of testing situation and using a play experience instead, can help the child make use of more skills and be more likely to practice them on his own
- Recognize the difference between Testing and Teaching
- Children learn by doing
- Emphasize Experience - not drills

Motivation for Learning:

- Nobody does anything without a reason that makes sense to them at the time - including young children
- Motivation for learning comes from within a person -

Inborn Drives:

1. Curiosity and Intrigue
2. for Autonomy and Sense of Self
3. Social Connection

Adapted Games

- Games set up a natural context for interaction, communication, and intrinsic motivation
- Use switch-adapted spinners
- Inclusive activity - everyone loves to use the adapted spinner
- Turn taking
- Individual game boards: BINGO, pizza game, face game
- Group game boards on carpet squares
- Social interaction and commenting
- Aided Language Stimulation in a natural context
- Practice of concepts in a natural context
- Adaptable for multiple levels - draw a card from your pile - if you get the answer right, move ahead, etc.