The Roads to Autonomous Communication Using Aided Language

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Purpose of AAC:
To enable the person to meet all of his/her **varied communication requirements** as **intelligibly, specifically, efficiently, independently** and in **as socially valued a manner** as possible.
- to understand others and to be understood
- to more fully and effectively participate in their various social roles

Individuals with complex communication needs have the same requirements; need to communicate for all the same varied purposes as their speaking peers.

Varied Communication requirements
- Common Requirements (peer referenced)
- Individual requirements
- General Requirements (throughout the day)
- Specific Requirements (particular activity)

Communication requirements change
- Today – tomorrow planning (Beukelman & Mirenda,)

Long-term destination is autonomous communication: *being able to say whatever I want to say, to whoever I want to say it to, whenever I want to say it.*

What is meant by autonomous communication?

Communicative autonomy (von Tetzchner & Grove, 2003)
The person who uses AAC:
- has few restrictions on what they can say
- is responsible for their own language production
- is able to express self in accordance with own communicative intentions.

Communication autonomy refers to where messages originate.
To communicate in the words you're thinking.
- Communication autonomy is not the same as making choices.
- Autonomous communication is not necessarily sophisticated or complex language.

Communicative autonomy is not dependent on the individual's ability to independently operate their AAC system but refers to where messages originate. For example, a person who relies on a partner to turn pages in their communication book can maintain communication autonomy by the use of strategies to direct their partner to the page(s) they need to express their own messages.
- **Autonomous communication is not necessarily independent**
- **Independent communication is not necessarily autonomous**

Will the individual take it to a party? Will they see it as their voice to meet genuine communication requirements in every day natural contexts?

What is the difference between autonomous communication and independent communication for individuals who have complex communication needs?

Independence is often defined narrowly to indicate that the person was able to do something without assistance. Sometimes the ability to do something independently is seen as more valued than being able to produce and autonomous thought. Just being able to do something independently does not ensure that what they are doing will meet a person's communication needs now and in the future.

True independence is more than independent operation of a device. True independence also involves **self-determination**, to communicate according to one's own intentions and motivations to say what you want to say, to whomever, whenever you want to say it in the manner you prefer to express your individual personality.

Independent, autonomous communication.

Operational independence using a speech generating device does provide individuals with the ability to autonomously communicate with wider range of partners. However, it is **not possible to depend on a high-tech device as the only option for communication**. **All people require a light (paper) tech option** to ensure they have a method to communicate at any time in all situations. **Multiple systems provide the individual with possibilities to select the most effective / preferred method they have available to autonomously communicate whenever they have something to say.**

The **'smart-partner operating system'** of light-tech (paper) systems also provides significant advantages for some individuals (learning) autonomous communication.
•   Human partners can observe and problem solve in ways a computer operating system cannot. For example, using a light-tech system a partner can interpret which of the fingers touching the display is pointing to a symbol and which are resting, can wait additional time when they see the child is about to indicate 'yes' and can interpret the body language and facial expressions that indicate an error has been made. There is no need to access additional buttons to delete words and clear – this is automatically done by the partner.

•   Partners can extrapolate from key words the meaning of a message using contextual cues. For example, the child indicates the symbols "you do it, you, your turn" "look" and a smart-partner will produce the message "you look". On a speech generating device all words would go into the message window to produce the message "you do it, you, your turn look".

•   The human partner can provide extra processing time. The partner can hold their finger on an item before reading the label or turning a page. In addition, after the child indicates an item they can hold their finger on that item as they confirm the selection. This is in contrast to high-tech dynamic display systems where a selection immediately changes the page and the original item quickly "disappears". These faster page changes on a device can make it difficult for children to initially learn the navigation process. Fast level changes can be especially confusing and frustrating if the child accidentally accessed a linked button.

•   For some children, the partner's role in operating the paper-tech system supports learning about human interaction and the purpose of communication.   The focus shifts to interacting with their partner rather then interacting with (producing an effect on) an aid/device.

Individuals need to be prepared for Communication at ANY TIME
- Autonomy to communicate whenever I have something to say
- According to own intentions
  - Right to choose when to communicate (or not)
- Multiple solutions for efficient, autonomous communication in varied situations
- Habits for communication at any time

Where is my AAC system when I have something to say?
- **Need to develop HABITS for communication at ANY TIME**
- Multiple communication strategies may be required to support efficient, autonomous communication in varied situations

Communication autonomy is supported by access to enough vocabulary to generate own messages

- Spelling to generate own words (true autonomy)

- Whole word/symbol AAC systems
  - Degree of autonomy will be influenced by the size and diversity of the vocabulary pool
  - The larger the vocabulary pool the more likely it is that the word I am thinking will be there.
  - Efficient organisation of vocabulary supports more frequent autonomous communication

The Challenge! *Porter & Kirkland, 1995, p.93-94*

"A child who uses speech will independently select the words she wishes to use from the vast array of words she hears/sees used everyday.

A child who uses AAC will independently select the words she wishes to use from the vocabulary other people have chosen to model and, for aided symbols, made available for her to use."

Competent communication for people who use AAC (Light, 1989)

Sufficient knowledge, judgment and skill in four areas
- linguistic competence
- operational competence
- social competence
  - *sociolinguistic*
  - *sociorelational aspects.*
- strategic competence

Competency =   Knowledge, judgement and skill
Sufficient competence not just to use AAC to communicate in discrete situations
- Also ability to
  - problem-solve
  - select
  - generate, create
  - express self
  - listen
  - accommodate to different partner / situation requirements

- teach
- repair, etc
- Active problem solving develops knowledge and judgement, not just skill.
- Active problem solving
  - Child directed, rather than adult directed.
  - No external right or wrong
  - Child evaluates: what worked / didn't work according to their own intention.
- Communication is MESSY in the real world!

Light, 1997
- Communication competence is about people"
- "Communication competence is learned"
  - Provide meaningful opportunities for communication
  - Working with partners
- "Different people value different communication skills"
- "Different individuals may require different skills to attain communicative competence"

Competent communication is co-constructed
- Skills, knowledge and judgement of person who uses AAC
  with
- Skills knowledge and judgement of the partner
  - Range of partners

Can do   ≠   Can use
- Vocabulary has to be there when you need to use it!
- We can exert an inordinate amount of control over another person's use of aided AAC.
- Beware of being the Gatekeeper!

Communication accessibility (von Tetzchner & Grove 2003)
There are people in the social environment who
- understand the alternative communication form
- can scaffold it in the acquisition period
- are able and willing to communicate in a manner that gives the individual maximal communicative autonomy.

NEED
- People in the individual's social networks developing sufficient knowledge, judgement and skills to be competent communication partners
- General community capacity building

Habits to support autonomous communication
- Routinely ensuring the AAC system is readily available for use in all situations
- Providing enough time for the person to communicate their own message in the manner / words they prefer

Development of healthy AAC Habits
- Motivation to prioritize another person's communication
- Influenced by beliefs & understanding of
  - Communication
  - Individual Autonomy
  - The purposes and critical importance of AAC to the individual with complex communication needs.

"*Just because you know me doesn't mean you can read my mind or can express my words for me.*"   Melinda Smith, 2011

"It all comes back to understanding that not being able to talk doesn't mean you have nothing to say."

Connecting with AAC system as MY tool to communicate according to my own intentions.

Do I see it as something that enables me to say what I want to say, when I want to say it?

Can do ≠ Can use ≠ Does use

Long term use is dependent on the development of habits to ensure the AAC system is available for communication at ANY TIME and the individual connecting with the AAC system as their tool to meet their genuine, autonomous communication requirement in every day natural contexts.

Will the individual take it to a party?

AARCH

Communication
- **A**utonomy
- **A**ccessibility
- **R**equirements
- **C**ompetence
- **H**abits – for communication AT ANY TIME.

How will our intervention practices affect the individual's learning that the AAC system is their voice?

What strategies will most effectively support the development of autonomous communication?

Remember the aim of using AAC
 *For the person to meet his/her **varied, autonomous, communication requirements** as **intelligibly, specifically, efficiently, independently** and in as **socially valued** a manner as possible in order **to understand others** and to **be understood.*** (Porter, 1997) **To enable individuals to more fully and effectively participate in their various social roles.**

This aim focuses assessment and intervention on problem-solving in order to ***discover the circumstances which will enable the individual to achieve their present communication requirements and to provide opportunities to stimulate development of more intelligible, specific, efficient, independent and socially valued communication in the future.***

The aim is subsequently used as a **quality indicator**.
Is the intervention enabling the person to meet their receptive and expressive communication requirements more intelligibly, specifically, efficiently, independently or in a more socially valued manner than currently available to them?

Is the intervention supporting the development of autonomous communication?

What strategies of Aided Language Stimulation support the development of autonomous communication?

Aided language stimulation attempts to recreate the conditions known to stimulate expressive spoken and sign language development for children using aided symbols.

Aided language stimulation (Goossens', Crain & Elder, 1992)

- System design - Engineering the environment with aided symbols

- Modeling

- Stimulating self-initiated, generative use (Specific prompts and cues)

Children learning to use AAC need to:

1. see **models** of their system of communication used interactively by other people to communicate real messages in real situations

2. have multiple **opportunities to practice** communicating real messages in real situations – with appropriate **scaffolds** as required for successful communication

3. **receive natural feedback** as to the effectiveness of their communication

4. have their messages **expanded** by other people using modes of communication they will be able to use to communicate more effectively.

Remember: Children do not have to demonstrate expressive use of any of the displays before beginning aided language stimulation. Initially you are looking for what display features appear to assist the child to attend to other people using aided language to communicate. It is more important to make a start than to get it right!

What do we know from Aided language stimulation Research

Research has now demonstrated that aided language stimulation techniques can support individuals of various ages and disabilities to expressively use graphic symbols (Barto, Sevcik, & Romski, 2006; Beck Stoner, & Dennis, 2009; Binger & Light, 2007; Bruno, & Trembath, 2006; Cafiero, 2001; Dada, & Alant, 2009; Drager, Postal, Carrolus, Castellano, Gagliano & Glynn, 2006; Goossens', 1989; Harris, & Reichle, 2004; . Romski, Sevcik, Robinson & Bakeman, 1994; Romski, Sevcik, Robinson, Mervis, & Bertrand, 1995).
Many of these studies have reported on relatively short periods of aided language stimulation and /or immersion in only a few situations using a limited or situation specific vocabulary. The outcome "expressive use of aided symbols" can have different connotations and outcome criteria. As many of the research studies were, by necessity, of shorter duration they often measured the child's learning to use a limited range of targeted symbols.

When the long-term outcome is directed towards autonomous communication, rather than symbol learning and use, then we need to collect information on the individual's use of the AAC system to express self-determined messages in multiple situations without prompting – to meet their own communication requirements. We also need to gather information from the individual and their social networks whether the use of AAC enhanced the quality of their lives.

*"The desired outcome of an AAC assessment is a "working hypothesis" based on an understanding of the people and situations involved, a consensus, and a plan. Even the most experienced team can not know if their recommendations will meet expectations, enhance opportunities, or overcome barriers. Likewise, **only time will tell whether AAC tools, techniques and strategies will improve communication skills in ways that are meaningful to the consumer**."*   Blackstone, 1995

A true aided language learning environment (immersion) would provide children with numerous models of symbols used to express a full range of communication intents, messages, and topics that naturally occur during interactions in all contexts, throughout the day (Mirenda, 2008; Porter & Cafiero, 2009). As yet there is little published information on the effects of more intense immersion in an aided language-learning environment on the long–term development of autonomous communication. As aided language stimulation strategies commenced in the early 1990's we now have some long-term clinical evidence with young adults who were exposed to aided language stimulation as young children.

What do we mean by the term modeling?

All modeling is not the same
- What we mean by modeling?
- Long term destination is being able to say what I want to say, to whoever I want to say it to, whenever I want to say it

Type of Models
- General receptive input – use of language by people to communicate variety of genuine messages & interactions in natural contexts (immersion)
- Modeling as a prompt or cue

Modeling as a prompt or cue

Another models a possible "child message/turn" in a natural situation – Opportunity, but no expectation that child will produce the modeled message at that time	Appropriate models that provide ideas but do not interfere with child's intent to communicate his own thoughts

- -

Model a targeted "child message/turn" in a set-up situation – Expectation that child will say that specific message – The model is used as part of the prompt to "GET THEM TO SAY IT"	Inappropriate models (adult fixed agenda) Changes the pragmatics Interfere with the development of autonomous communication
Mand-model – Say "…." – Child expected to imitate the model	

Modeling and expanding for autonomous communication
- Our role is to provide ideas of possibilities (NO fixed agenda)
- Child's role to select what they want according to their own agenda (intentions)

General receptive input - Immersion in spoken language
- Surrounded
- Variety
- Influences not planned
- Usually people's own language passing onto the child
- Directed at others around the child
- Directly interacting with the child

Interactions known to support spoken language development
- Synchronize language to the child's attention and activities (Michael Siller and Marian Sigman 2002-04)
- Rich models of language throughout the day

Developing Aided language for autonomous communication
- Need ideas of what to say, when to whom, and how using aided symbols
- What are we modeling in aided symbols?

General receptive input?
- <u>What</u> are we saying?
    - Range functions, messages, topics, vocabulary, language structures?
    - Conversation?
    - Strategic competencies?
    - Expansion – what?
- <u>Who</u> is saying it?
    - Who are they saying it to?

Receptive input, modeling, expanding
- Whose message is it?
- Is this something the child might want to say?
    - age
    - Gender
    - social role(s)
    - image,
    - personality
    - interests
    - etc.

Child's question:
> *"Is this something I want, see myself (capable of) doing?"*

Needs to spark their interest
- Interesting possibilities!
- Looks like fun!
- Might help!
- I can do that!
- What a good idea!
- Etc.

All modeling is not equal!

Model age-relevant talk – Child Talk
- Observe child – linguistic map/expand informal communication using AAC
- Teach peers and siblings to model using AAC
- Adults can re-relate what speaking peers and siblings say
- Helping doll / adult (not partner) uses AAC to provide a direct model of what child may like to say (i.e. they fulfil child's turn)
- Teach assistants to be peer models

General receptive input?
- <u>WHERE</u> is it being said? Do I know I can use AAC in this environment? Any ideas of what I can say using AAC in this context? What are the communication rules in this environment / with this partner? What are the cues to communicate, take a turn, in this situation?
- <u>WHEN</u> is it being said?
    - How often?
    - In what contexts?

Quantity of receptive input (Jane Korsten (2011) QIAT Listserve 4th April)
- The typically developing child will have been exposed to oral language for approximately 4,380 waking hours by the time he begins speaking at about 18 months of age.
- If someone is using a different symbol set and only has exposure to it two times a week for 20-30 minutes each it will take 84 years to have the same experience with his symbols that the typically developing child has with the spoken word in 18 months!!!
- The typically developing child will demonstrate language competency around 9-12 years of age having being immersed in and practicing oral language for approximately 36,500 waking hours. For 9-12 years that child has been receiving corrective feedback while practicing with the spoken word.
- At twice a week, 20 – 30 minutes each time, it will take the alternative symbols user 701 years to have the same experience.

General receptive input
- <u>HOW</u> is it being said?
  - Initiation
  - Access

Model access method - some of the time

Direct models
- Increase range of functions, messages modeled using AAC
  - Linguistic, social, strategic
- Emphasize the path to express the message
- Reduce excess verbal clutter of the scan for the child - between targeted items
- Does not model HOW the child could express self using PODD
  - Operational

Full Model
- Need to model HOW the child could communicate using their PODD
- How they can access the book
- I could do that!!

When to use what?
- Direct or part model most of time
- Some of the time, when there is time use full model
- Easier to model full model when two other people are present
  - one person scanning, other person talking, child watching
- Initially teach new partners to begin providing receptive input using a direct model

Children will learn to use their AAC systems they way they experience them being used.
  - What
  - Where
  - When
  - Who
  - How

What's being modeled?

What is being said? **Range of**	Communication functions.	
	Vocabulary	
	Topics	
	Structures (syntax, word morphology)	
	Expansion	
Strategic competencies	Multi-modal	
	Communication management & repair strategies	
	Hinting	
Who	Family	
	Peers	
	Teachers, therapists	
	Other paid people	
	Other community people	
Where	Home	
	School / work	
	Community	
	Other	
When	Anytime, throughout the day	
	In specific activities (Which ones?)	
How	Initiation	
	Access method (some of the time)	
	Uses system organization	

Features of AAC systems to support autonomous communication:

ASK
- How will the specific features of the AAC systems support the individual's learning that the AAC system is their voice?

- What are the features in AAC systems that will most effectively support the development of autonomous communication?

Asking the question "What does the child need to say, when, to whom and how?" can clarify the child's specific communication requirements for an aided system and raises considerations for the design of effective AAC systems.

What does the child need to say	When, where and to whom	How
What vocabulary/messages does the child need to communicate? What functions may be expressed with this vocabulary? How quickly does the message need to be related? (in a priority continuum!) What type of branching organization suits each function? What are the individual child's functional and developmental requirements for vocabulary items - considering pragmatics, semantics and syntax? What vocabulary does the child require to manage the interaction? What other vocabulary would predictably be used with this vocabulary?	Where and when is the child likely to use this vocabulary? Are there any practical considerations related to this environment? What is the child's physical position? What space is available for the AAC system? Which display features will best suit these situational requirements (size, access method, layout, type of display, included in book or presented separately)? Who will they be communicating with? Are there any specific communication partner requirements? What modes of communication do these partners understand? How can we support the intelligibility of this child's use of aided language with a broad range of partners? How much scaffolding needs to be built into the design of the system to support the partner's understanding of the child's messages? What are the time requirements for communicating in this situation?	What are the most effective modes to communicate these messages in different situations? What is the most efficient, intelligible, independent, sufficiently specific and socially valued mode? What are the requirements for aided language within the individual's multi-modal communication systems? Does the child require graphic symbol vocabulary to communicate that message or will they use another mode? How can we increase the efficiency of using an aided system? How much scaffolding needs to be built into the design of the system to enable efficient and intelligible communication? How can we support the child to independently access vocabulary? (Related to the concept of communicative autonomy.)

Designing Aided systems to support communication autonomy

- Communication system available all the time
  - Personal systems
  - Knowledge of methods to initiate communication
  - Partner training to establish habits
    - "See person, see communication system"

- Vocabulary that is always available
  - Not come and go at the discretion of others
  - Design features to enable person to control access to vocabulary
  - Larger vocabulary, enable self selection

Providing vocabulary
- For learning
- Adult to model
- Child to use
- Express a range of meanings
- Throughout the day
- For a range of functional purposes
- To stimulate language development
- Enable child to (learn to) meet their varied communication requirements

System Design
Goossens, Crain & Elder (1992) suggested that communication aids need
- Sufficient vocabulary to interact
    - for a full range of communication functions
    - to combine symbols into sentences
    - in a range of activities
- Similarities between individual systems
- Built for development
    - today and tomorrow
    - (within 'zone of proximal development')
- Selection techniques which are not too physically taxing or limiting to promote meaningful communication

These principles of intervention have been applied to the features included in PODD communication books. These criteria were applied to weigh the relative pros and cons of different design decisions in order to make compromises which most effectively enable each individual to meet their autonomous communication requirements, build accessibility and competence for communication at any time. PODD is just a strategy to meet these aims.

It is vital that the language and physical features of an AAC system enable the child to more successfully meet their actual, daily life, communication requirements. Poor uptake of aided communication systems in the child's daily environments has frequently been a challenge in AAC interventions.

 "..the adults who plan and adapt the language environment of children who use alternative means of communication should be providing models of language use in their own form. Moreover, these should be used for genuine communicative purposes, in all types of everyday settings and when the children are very young. One advantage for adults using a child's alternative language forms is that they may be able to identify shortcomings of the system and suggest ways and means to overcome them, as well as demonstrating to the child how the system may be best used.
        Renner, 2003, p.79

A significant challenge for providing vocabulary using whole word/phrase graphic symbols in light-tech systems is the requirement to have the vocabulary presented spatially in a 'hard copy' physical form. There are limitations on the number of items that can be included on one page. The complexity of this challenge increases when physical and/or sensory impairments limit the number of items which can be presented at one time. It is therefore necessary to determine appropriate strategies to organize vocabulary in aided systems to provide the child and their communication partners with easy access to the broad range of vocabulary items they require to communicate.

AAC system design for autonomous communication

Vocabulary pool supports autonomous communication*		
Able to communicate full range of functions		
Supports language acquisition and use (partner models & expansion)		
Supports understanding of other people's messages (as required)		
Includes vocabulary used around individual in their life – so they can select what they want to say		
Allows for individual style		
Strategies to collect new vocabulary on the spot		
Communication management, breakdown and repair strategies		
Strategies to manage limitations of aided AAC		
Considers individual's multi-modal communication strategies		
Able to (learn to) spell own messages		

Organization of Vocabulary supports more efficient, autonomous communication		
Individual can access all vocabulary in the system at any time (controls navigation)		
Considers pragmatic use: discourse for different functions (how communication occurs in the real world) - Different organizations to suit different functions		
Supports both individual and partner use (interaction)		
Enables faster access to predictable / frequently used vocabulary		
Strategies to store and access larger chunks of information for more efficient communication of narrative, whole messages, etc.		
Supports motor automaticity, without compromising autonomy or the ability of system to grow.		

Symbol features and page layout support more efficient location of vocabulary within a display.		
Planned development for transparency between systems as language needs expand.		
Specifically designed to suit individual's access method		
Specifically designed to accommodate for individual's additional challenges (e.g. vision, hearing)		
Organized to maximize efficiency to suit physical form		
Transparency between light-tech (paper) and high-tech (SGD) versions at the same language level. - ease of learning - ease of transition		

AAC system supports autonomous communication at ANY TIME		
Individual has method(s) to initiate communication (access their vocabulary) at any time.		
A way of communicating autonomous messages available all the time, in all positions and environments (may be achieved using multiple devices and strategies as part of whole AAC system)		
Methods to transport the system		
Physical size supports environmental use - Strategies to support system set-up in all situations		
Able to add vocabulary and store messages into the system quickly as needed - by partners - Individuals able to add own vocabulary and store messages		
Supports individual's learning & autonomous communication given their current capabilities - operational skills - need for partner scaffolding		
Considers individuals other communication requirements, e.g. SMS, email, phone etc.		

* Vocabulary pool: The size and complexity of the vocabulary pool (language included in the system) should reflect the individual's current language development, with room for others to model and expand to support the individual's language acquisition (zone of proximal development). Remember that all communication systems need to consider the range of functions and vocabulary used around and to the individual, so that they can select words they want to use from those they experience used around them. Remember the individual does not need to demonstrate knowledge of symbols / words before they are included for others to model.

Prompts used to cue expressive communication while maintaining the pragmatic integrity of the interaction and the individual's autonomy

General opportunities to communicate

In order to communicate using aided language a child requires:

- Reasons to communicate and life experiences that provides the child with topics to communicate about.
- **Appropriate vocabulary** available to express their messages with opportunities to have learned how this aided vocabulary can be used to communicate.
- Additional **time to communicate,** including sufficient pause time to initiate a communication interaction or their turn in an interaction.
- Someone to communicate with - partners who provide the child with opportunities to communicate according to the child's intentions.
- Expectations that the child can (learn to) communicate their own messages. Providing opportunities for the child to communicate, NOT taking over responsibility for the communication of the child's messages.
  Children who have complex challenges (physical, sensory, cognitive and/or language) generally require additional time to initiate communication. The time required to organize their body and move, process the input and generate a message can result in children missing the opportunity to initiate a turn in fast moving conversations. A child's opportunities to communicate may be further limited by:
    - lack of a clear method to initiate communication (request communication aid)
    - limited expectations that the child can, or will, communicate.

Scaffolding interactions which support early aided language use and acquisition focus on:

- interacting with the child
- assisting the child to understand your messages
- actively striving to understand the child's messages
- supporting the child's own active striving to communicate their message
- assisting the child to discover and use strategies to communicate their own messages (active participation and problem-solving)
- providing the child with clear natural feedback related to the effectiveness of their communication to transmit their message.

General strategies to scaffold interactions include:

- **Joint engagement.** Joint engagement involves both following the child's focus of attention and interest to support the successful communication of their own messages and the use of strategies to assist the child to follow their partner's focus of attention, to attend to and understand their partner's messages.

- **Attribute communicative meaning.** Partners actively strive to understand what the child is attempting to communicate and assign meaning to the child's actions. At the earliest stages, partners respond to any behavior that may possibly communicate meaning. Initially partners use all available information, including contextual information and their knowledge of the child, to work out the most likely meaning that can be assigned to these behaviors. Over time, partners will gradually require clearer, more intelligible, movements and more specific messages before they interpret the message (shaping behaviors towards the adult form).

- **Suggesting strategies, guiding children to express themselves.**
    - a method of communication
    - a method to achieve more intelligible communication
    - the types of words that may help communicate a message,
    - words they could use to express a message that is not intelligible to another partner.

- **Negotiating meaning.**

Natural feedback

Providing the child with clear, natural feedback is part of any scaffolding interaction. Natural feedback always focuses on the partner's understanding of the message. Natural feedback provides children with:
- opportunities to learn how partners observe and interpret the meaning of their behaviors, whether or not they intended their behavior to communicate a meaning
- information to evaluate the effectiveness of the strategies they used to communicate their intended message.

Natural feedback strategies include:

- **Reauditorizing** - the partner says each phrase, word or letter out-loud immediately after the child indicates it.

- **Verbally referencing** what they observe the child do, e.g. "You're *looking at me, you're looking at I DO, you're looking back at me".* This strategy provides children with clear feedback as to what behavior or movements the partner is observing and responding to.

- **Stating the meaning they assigned to a movement or behavior**

- **Recapping** - the partner repeats all the words the child has indicated (thus far). This is also a useful strategy to assist the child and partner to keep track of longer messages, especially when using slower access methods.

- When the child has finished producing their message, the partner **rewords the message, as they understand it, using full spoken English.**

General opportunities to communicate

- Receptive Input
- Opportunities to communicate
    - Vocabulary available
    - Someone to communicate with
    - Sufficient time to communicate (encouraging pause)
    - Using language that encourages child's communication
    - Reasons to communicate
- Natural feedback

For some children receptive input and general opportunities are all that's required to stimulate spontaneous, expressive communication.

Other children require additional scaffolds, prompts and cues, to stimulate expressive communication within ongoing interactions.

Scaffolding, additional prompts and cues

Interactional prompts and cues aim to support the child learning spontaneous, self-initiated communication. Prompts and cues may be required to support the child to:
- recognize opportunities to take a turn or initiate communication
- think of possible messages to communicate
- identify/use specific words or behaviors appropriate to the context
- use more specific, efficient, intelligible or socially valued methods to communicate their message.

Prompts and cues are selected and used in such a way as to:
- support and encourage the child's role as an active learner
- influence the processes underlying communication and language development
- stimulate the child's learning "what to say, when, to whom and how" in their daily life environments, i.e. to recognize and use naturally occurring cues to initiate communication or take a turn, ideas of what to say, knowledge of how to say it in different situations, recognize when it's OK to say it in a specific environment/ situation.

It is important to consider the effect of a prompt/cue on the child's learning about the pragmatic use of their AAC system. Prompts and cues need to be used in a manner which supports the integrity of the interaction and doesn't interfere with the discourse.

Consider the following:

Does the prompt/cue make communicative/pragmatic sense to the child?
It is unlikely to make sense to a child if a partner prompts them to communicate a message that the partner obviously already knows. Prompts and cues should be used in a way that at least maintains the illusion that the communication being prompted is actually transmitting a message to the partner. For example, verbally prompting a child "*You need to tell me in your book if you want a hug*" does not support the child's learning to understand that their AAC system can help them communicate their autonomous messages to other people. In contrast, the genuine feedback *"I don't understand what you want, maybe you could use your communication book to help me"* is more likely to result in the child learning that the purpose of their AAC system is to help people understand their messages. It also makes little sense to a child when the same person who asks a question, prompts the response.

Does the prompt/cue maintain the integrity of the discourse?
Verbal prompts/cues add another turn into the main discourse. This can interfere with the original pattern of the speech act pairs. For example, the following discourse has a speech act pair of comment/acknowledgement:
Partner: *"This chocolate is delicious" (*comment)
Child: "*Yeah, it's really nice*" (acknowledgement)

However, if a question is used to prompt the child's utterance, the child's speech act loses its relationship to the partner's comment, it becomes a query/response to prompter's verbal cue.
Partner: *"This chocolate is delicious" (*comment)
Prompter: "*What do you think about the chocolate?"* (query)
Child: "*It's really nice*" (response)
If the child's utterance is in response to a direction to communicate, the child's speech act pair becomes directive/compliance with the prompter's direction.
Partner: *"This chocolate is delicious" (*comment)
Prompter: "*You tell ….. what you think about the chocolate?"* (directive)
Child: "*It's really nice*" (compliance)

These subtle changes in the type of speech act pairs stimulated by verbal prompts and cues alter how the child is learning to take a turn in a conversation. If questions and directives are repeatedly used to prompt children, they may only have opportunities to learn how to respond and comply. Light, Collier & Parnes, (1985 a, b, c) noted that a high proportion of aided language use by the children in their study was in response to questions and directions with a tendency to forfeit non-obligatory turns.

Prompts and cues are selected need to be selected with an aim to maintain the integrity of the original speech act pair and ensure that the child has opportunities to learn and practice using a variety of speech acts including taking non-obligatory turns.

Does the prompt/cue support the child's learning to initiate communication?
The use of prompts and cues needs to support the child's initiation to communicate their own ideas and topics.

Hierarchy of prompts and cues
It is helpful to view prompts in a hierarchy, from least intrusive to most intrusive. How much does the prompt or cue intrude on (mess with) the natural cues to communicate? Using this hierarchy, adults only provide the level of prompt the child requires to successfully communicate in a given context. A child may need additional cues when the situation is less familiar or challenging new learning. The cues required to support successful communication in each situation become less intrusive over time until the child is able to successfully initiate their message given only the cues we all use to communicate, i.e. a pause and an appropriate context for the message.

Least intrusive
- ☐ time delay, contextual cue *
- ☐ expectant pause*
- ☐ environmental / gestural cue *+
- ☐ indirect verbal cue * +
- ☐ search light cue * +
- ☐ direct verbal cue * +
- ☐ partner-assisted auditory plus visual scanning * +
- ☐ momentary light cue +
- ☐ fixed light cue +
- ☐ another models response +
- ☐ verbal referencing + (?*)
- ☐ accomplice suggestion +
- ☐ physical prompt (providing opportunity to shape) +

Most intrusive
Partner * or Accomplice + prompt
(Goossens', Crain & Elder, 1992; Department of Education, 2001; Porter & Kirkland, 1995)

Partner or accomplice prompt?

Some cues are provided by the child's communication partner (the person they are interacting with at the time), but other cues are more effectively provided by a second person, the child's accomplice (Porter & Kirkland, 1995). The accomplice works with the child to provide them with experiences communicating at a more complex level than they are currently able to achieve alone. The aim is to provide the child with successful experiences using AAC which they can then use as a basis for learning more independent communication.

In Vygotskian terms, an accomplice plays a significant role providing structured guidance as a more knowledgeable skilled person. This collaborative functioning, the child and accomplice working together, stimulates the developmental process in the child's zone of proximal development. Goossens' et al (1992) use the term secondary facilitator to refer to people performing this role in group programs where the primary facilitator is the teacher or person leading the group interaction.

The use of an accomplice also assists to maintain the pragmatic integrity of the interaction. Prompts and cues can be provided by someone (the accomplice) who already knows the child's message, to support their communication with another person who does not already know the message. It is important that the accomplice always observes for the child's attempts to initiate communication and ensures that the message they are accomplicing is something the child wants to say, e.g. checks with the child " *Do you want to say ....?*".

There are five main situations when accomplice prompts and cues may be used.

1. The accomplice assists a child to problem solve and successfully communicate a required message. For example, a child is asked their name and the accomplice assists the child to locate the answer using their AAC system.

2. The accomplice has "read" the child's informal communication message, e.g. body language or pointing, and assists the child to problem solve/use a mode that will be more intelligible to another partner. For example, a child is smiling and looking at a game and the accomplice assists the child to communicate *I WANT A GO* (using their AAC system) to the other children playing the game.

3. The accomplice knows the child's message and has confirmed with the child that they want to communicate this message (probably with a yes/no question). For example, a friend has asked the child to a party. The accomplice prompts the child to relate this exciting message to mom when she comes to pick them up.

4. The accomplice suggests an idea of what the child could say at a given time to contribute to a conversation. For example:
    • Someone has just told a child that it is their birthday today, the accomplice could suggest that the child may like to say *HAPPY BIRTHDAY* or ask *HOW OLD ARE YOU?* or *WHAT PRESENTS DID YOU GET?*
    • The child has just completed an assigned task in class, the accomplice could suggest that they tell the teacher *I'M DONE* or ask *WHAT SHOULD I DO NOW?*

5. The accomplice assists a child to problem-solve how they can communicate their message more intelligibly, efficiently, specifically or in a more socially valued way, i.e. assists to solve, or prevent probable communication breakdown. For example, a child is attempting to use a sign approximation with a new friend. The accomplice may comment that the new friend doesn't understand sign and/or provide a search shadow light cue onto the child's AAC system.

Description of commonly used prompts and cues

Time delay, contextual cue
Time delay and contextual cues are what usually prompt people to communicate, i.e. a pause in the conversation to know that we can have a turn now and contextual cues to provide us with "something to say". Children who have complex communication needs are likely to require a longer pause to organize themselves to initiate communication using aided language.

Expectant pause
An expectant pause is an exaggerated time delay with encouraging facial expression, eye-contact, eye-gaze, and body postures suggesting "*It's your turn now*". An expectant pause is used to highlight, "*Hey you could, or should, say something now*", without saying anything. To cue a child more specifically to use their PODD communication book to take a turn, exaggerated looking towards the communication book can be added to an expectant pause. This suggests that you are waiting for the child to say something using their communication book.

Environmental / Gestural cue
Indicating or moving a person or object in the environment can be used to highlight what the person may want to communicate about. For example, obviously touching or flicking your hair. Without saying anything may stimulate a child to comment on your new haircut.
An environmental or gestural cue highlights *Hey here is something you may want to talk about* without saying anything. Indicating or placing the child's PODD in front of them is also an environmental cue that they may want to *say something now.*

Verbal cues
Verbal cues can be used to "set the stage" for communication, to assist a child with ideas of what to say and/or the process (movements) needed to communicate their message.

Indirect verbal cue
This verbal cue focuses the child's attention on an event that provides them with a reason to communicate. The words do not directly indicate what to say, but highlight the context for communication. The child needs to generate their own message if they choose to take up this opportunity to communicate. An indirect verbal cue states "*Hey this happened*", inferring "*Do you have something to say about that*?"

Direct verbal cue
A direct verbal cue contains a more explicit clue as to what the child might say, i.e. an appropriate message given the context.

Verbal referencing
Verbal referencing can be used as a prompt to support the child's problem-solving and production of movements to communicate. The verbal reference outlines the process for communicating the message. For example:
• assisting a child to use an intelligible method to attract their partner's attention with the following verbal reference *"I look at ….., I make a noise, I look at my (I have something to say) wristband"*
• assisting a child to intelligibly use eye-gaze to access their PODD communication book with the following verbal reference *"I look around (at all the symbols), I look at (partner), and I look at the one I want, ready LOOK NOW".*
This use of verbal referencing can also assist a child to learn how to use self-talk to independently use the required movements/movement sequence for more intelligible communication.

Accomplice suggestion
An accomplice may suggest ideas of possible messages the child could communicate in a given situation or a way that the child could more successfully communicate their message.

Shadow light cues
Goossens', Crain & Elder (1992) describe the use of a small flashlight or penlight to cue a child to use their aided communication symbols without using verbal or physical prompts. They describe three levels of providing shadow light cues, with each level adding additional cues to the child.

Search light cue
When an opportunity arises for the child to communicate something, and they have not taken up their turn in response to the time delay/contextual cues, a light is shone in a "zig-zag" fashion over all of the display, or maybe on the section that contains the relevant word on a complex display. It is a prompt to "say something" without defining what the something may be. This can be useful at times when the child is able to formulate their own messages, but is not initiating the use of this skill. It leaves "what" the child says very open.

Momentary light cue
When there is an identified/targeted message, the light is shone onto the target symbol for a brief 2 second period. This is like suggesting "*Hey you could say this*" without interrupting the flow of the interaction.

Constant or fixed light cue
When there is an identified/targeted message, the light is constantly shone or repeatedly flashed onto a targeted symbol. This may assist a child to shift their attention onto the targeted symbol and may suggest "*You should be saying this now*" without interrupting the flow of the interaction.

Momentary and fixed light cues can also be used to support a child to produce whole, syntactically correct, messages for specific, agreed purposes. For example, a child needs to ask their teacher "*What do I need to do now?"* but does not currently have the syntactical abilities to independently construct this message. Light cuing can enable the child to successfully communicate this message directly to their teacher as the child points to each word highlighted by their accomplice.

Light cues may also be used to highlight operational buttons, pragmatic branch starters and category names to assist a child to learn to navigate to appropriate pages in their PODD communication book.

Partner-assisted auditory plus visual scanning
When a child has indicated a desire to say something but is uncertain of where to locate the required vocabulary, partner-assisted auditory plus visual scanning can be used to assist the child to locate the required symbol. The label for each symbol is spoken as the symbol is visually shown to the child (pointed to with a light or finger, picked up and shown to the child). The child either indicates the one they want to say immediately, when it is said, or waits until all items have been scanned before indicating their message**.**

This strategy is particularly useful when introducing a new PODD communication book with children who have sufficient understanding of spoken language. This strategy can enable a child to communicate using their PODD communication book before they have learned to independently discriminate and locate the required symbols. This strategy can also assist children to learn the symbols and vocabulary organization of the PODD communication book.

Another models the response
If the child does not take up an opportunity to express a specific targeted message, or take up an obvious opportunity to communicate, another person or a helping doll can model that message. This ensures that created communication opportunities do not become unsuccessful with unfilled pauses and also provides a model to develop the child's knowledge of what they could say. The child may also choose to imitate the model (remember that this type of imitation is common in typical language development).

Physical prompts (providing opportunity to shape)
Co-active movements and physical prompts can be used to provide a child with an opportunity to observe the results of performing a particular action to communicate a targeted message. The co-actively produced movement provides an opportunity for the child to experience successful communication as the partner assigns meaning and responds appropriately to the message. The prompted movement is shaped into communication by the partner's response to the message. The aim is that successful experiences will stimulate the child's understanding and desire to attempt to repeat the behavior to more independently communicate the message. Physical prompts should therefore be directed towards movements that the child is capable of producing independently. This is a very intrusive prompt. It is generally only used when children have little idea of the communication process, and other prompts have not been strong enough to stimulate the production of the communicative behavior. The aim is always to move as quickly as possible to less intrusive prompts encouraging independent production of messages.

Remember that the purpose of using language is to communicate and interact with others.


Keep aided language stimulation fun and interactive!

Different pathways to developing language and autonomous communication:

Typical spoken language development

Language learning environment

Sensory-motor behaviours → Gestural (conventional) signals Directed to partner → Language (symbolic/linguistic communication)

Language learning environment
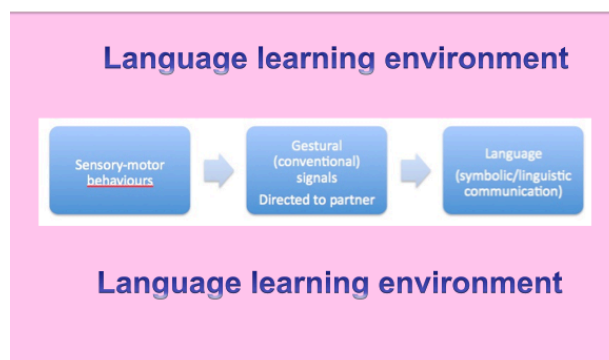
People who have complex communication needs who need to learn to use aided AAC will need input in the modes they are learning to communicate.
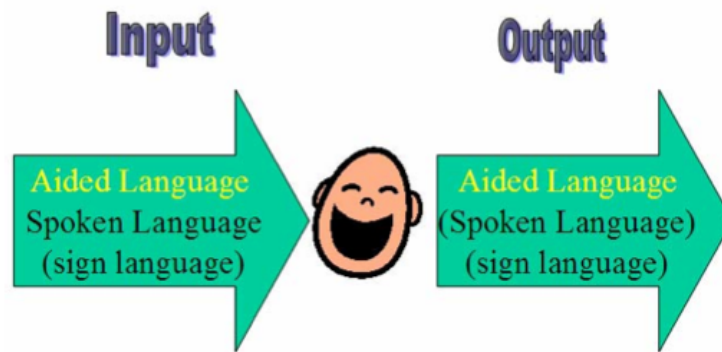

Pathway for children who are learning aided language as their first language (deaf, auditory processing challenges, severe ASD)

Von Tetzchner & Grove 2003 proposed the existence of two main developmental paths for children with complex communication needs, based on their varying comprehension of spoken language.
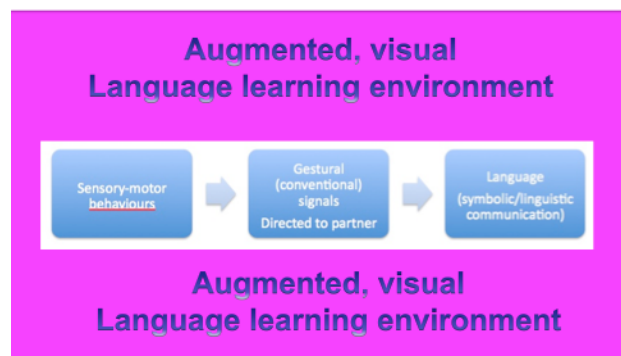
1. Children who have intact comprehension of speech may use their pre-existing, conceptual knowledge to support their learning of aided language. This is similar to second language learning. These children will still require models of the aided language to learn the unique usage and characteristics of this language, but can map their existing knowledge of language concepts and structure onto the new form.
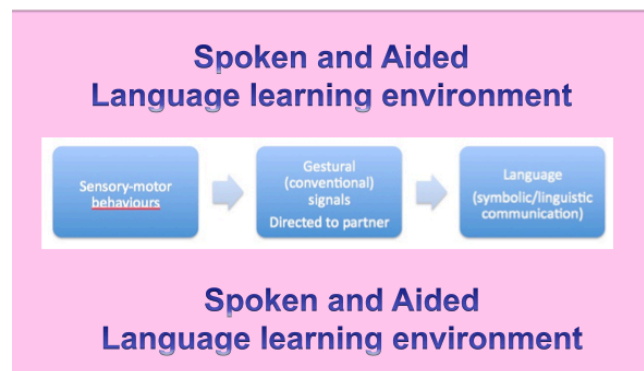
2. Children who have very limited comprehension of spoken language will need to acquire aided language without reference to a pre-existing knowledge of speech. This requires the independent creation of a meaning system with AAC language forms. The processes involved would be similar to first language learning with multiple models of language use required to develop a meaning system.

Children who have limited comprehension of spoken language

- Need others to use a range of aided and unaided AAC modes and strategies to support their understanding
    - Need vocabularies for others to use to support understanding and language learning
    - Larger vocabulary to provide receptive input

- Need more models of AAC use prior to expressive use
    - Limited pre-existing understanding of language
    - Unable to re-code meaning
    - Learning AAC modes as a first language

Extra vocabulary for receptive input to support understanding and operation

SGD for receptive input

Pathway plus additional teaching/learning needs for children who face severe motor or sensory motor learning challenges and may need to learn movements for access to communication.
(including cerebral palsy, Rett syndrome, severe ASD)

All communication is dependent on movement of some type
- Speech
- Facial expression, eye-contact, actions in the environment
- Gesture – sign
- Aided AAC

Intelligible communication is dependent on
- Conventional movements
- Graded movement
- Repeatable movements

Movement depends on intact sensory feedback (especially learning new movements)

Learning to produce intelligible movements is complicated by
- Underlying issues affecting posture, motor control and/or sensory processing
  - resulting in significant challenges producing and/or grading movements for communication.
- Atypical or extraneous movements affecting the intelligibility of communication
- Few, if any, models of people using movements (AAC modes) they could use to communicate.

Catch 22 in AAC assessment-intervention

A "Catch 22" = a circular dilemma, "a set of circumstances in which one requirement is dependent upon another, which is in turn dependent upon the first" (Oxford English dictionary)

"We can't determine the child's true level of functioning because of the child's lack of reliable means of communication. We can't plan viable communication intervention because of the lack of data regarding the child's true level of functioning" Goossens', 1989, p. 14

"Catch 22" in aided language acquisition
- Aided language does not naturally exist in the environment:
  - The child cannot spontaneously uptake something that is not there.
  - Professionals intervene - provide aided language based on their expectations of what's possible.
- The child can only demonstrate ability to use what has been set up for use:
  - Uptake may be influenced by a variety of factors.
- Others can only be influenced by the child's use of what has been set up to use.

Typically Partners
- Look for eye-gaze, facial expression, gesture & actions in the environment to signal the child's
  - Understanding
  - Interest
- Naturally interpret and expand these behaviors using language.

The different communication behaviors of some children who have complex communication needs, and movement patterns of children with significant physical challenges, may further influence the input naturally provided by others.\

- The different sensory processing and movement patterns of children who have complex visual, physical and communication needs may not be well understood by people in their environment.

Different sensory processing and movement patterns.
- Standardized assessments for cognitive and communication skills, even those which allow for multiple access methodologies, depend on the child having an intelligible motor response.
- All assessment tasks are basically the observation of a motor response (looking, pointing, gesture, touching a switch, speech, etc) to a sensory input (auditory, visual, tactile sensation of the test questions and materials). The internal processes of cognition and language understanding are inferred from the child's particular movement responses to carefully selected sensory inputs.
- A multiplicity of skills (physical, sensory, cognitive, social-emotional and communication) are involved in every task. Lack of success may be due to difficulties in any of these components, not necessarily the targeted skill of the assessment task.
- Even observational assessments and profiles rely on the assessor or informant's observation and understanding of the child's movements as they engage with sensory inputs in their daily environments.
- Sensory and movement challenges can result in **different** communication behaviors and an inability to spontaneously develop and use the gestural communication that cues us to stimulate language development. It is the child's use of these early communication (sensory motor) behaviors that partner's look for to signal the child's understanding and interest in interactions and naturally interpret and expand using language. Early communication assessments rely on these body movements, gesture and/or eye-gaze.
- Our observations of the child's current demonstration of skill may not reflect the child's underlying competence.
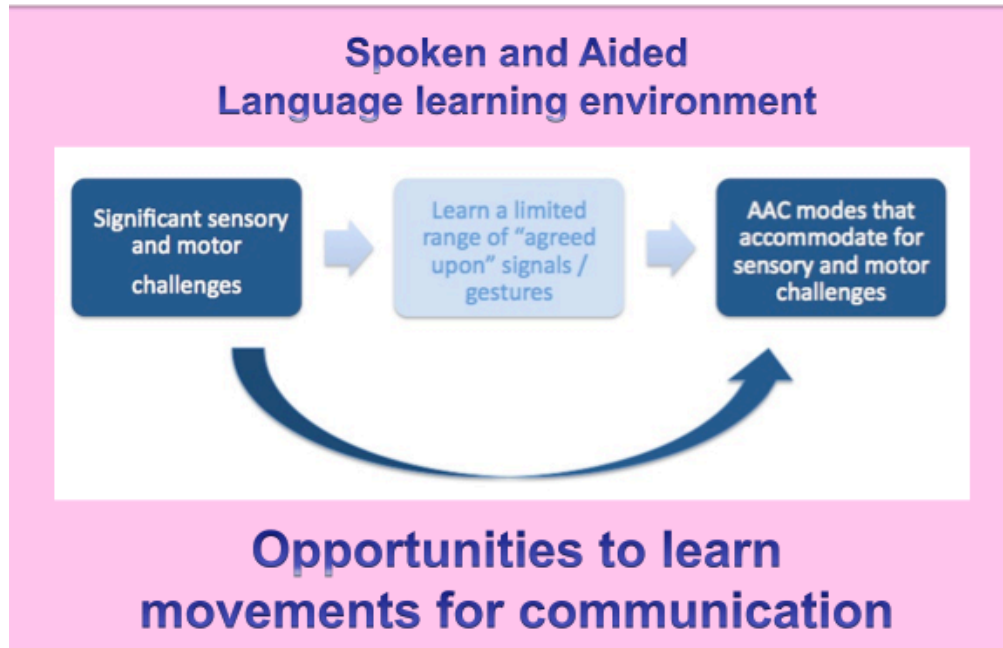
Variability of Response:
- Variability of the response is both typical and expected for the child who has complex needs – all the conditions, scaffolds, variables (sensory presentation, motor position, personal state, environmental support and opportunity) need to be in place for the child to perform.
- The child also needs to know the possibilities of what we expect – the possibilities of ways they can do something (they may have experienced very few models that they can relate to in terms of their movement possibilities, to learn rules for how they can communicate, what we will understand and respond to).
- Children who need to exert a lot of time and energy to communicate may also be more selective about which communication opportunities they consider worth their effort.

Spontaneous development of communication is unlikely

- Never seen those movements used to communicate.
- Movements require practice to learn.
- Need structured opportunities to learn
    - motor control
    - to generalize / problem-solve how to use these skills to communicate with others in a variety of functional positions, activities and settings.

Significant sensory-motor challenges

Spoken and Aided Language learning environment

Significant sensory and motor challenges	→	Learn a limited range of "agreed upon" signals / gestures	→	AAC modes that accommodate for sensory and motor challenges

Opportunities to learn movements for communication

General strategies to develop operational control include:
- Developing our knowledge of the child's movement patterns
- Identifying and assigning meaning to possible movements for communication
- General improvement of physical position and movement control (motor learning)
- Teaching specific movements for communication
- Receptive input in a range of AAC modes
- Capitalising on opportunities for the child to communicate

Observation of the child interacting in their natural environments with key communication partners is preferable, but not always possible. It may be necessary to contrive situations and activities that provide opportunities for genuine communication interactions (Lahey, 1990; Wetherby & Prutting, 1984; Iacono, Carter & Hook, 1998). In these situations it is important to ensure that opportunities for the child to initiate communication for a range of functional purposes are created.

Modified Communication Temptations Iacono, Carter & Hook, 1998

- Create obvious opportunities for communication
- Create a reason to communicate and a PAUSE
  - Interrupt activity
  - Offer non-preferred item
  - Something unexpected (silly)
  - etc

NB: the need for specific (set up) communication temptations reduces as children initiate own ideas

Assessment – intervention to support children who have cerebral palsy to develop and use more efficient and intelligible movements (operation) to communicate needs to include strategies to:
- Receptive input in modes the child may be able to learn to use (best guess)
- Develop underlying capabilities for posture and motor control, e.g. learn to move one part of the body without associated movements in other body parts (disassociation), weight-shift, stability, symmetry
- Stimulate the developmental process, e.g. providing meaningful feedback to possibly communicative, spontaneous movements (behaviours).
- Teach specific movements for communication.
- Accommodate for current sensory, postural and movement challenges.

Teaching specific movements for communication may involve:
- others modeling the use of the child's access methods to communicate
- verbal referencing, teaching the child to use self-talk to control movement and learn sequences of movements
- providing natural feedback on intelligibility
- assistance to problem-solve more effective movements, accomplice suggestion
- physical facilitations
- opportunities to practice movement control and access. This may include determining times in the child's weekly schedule for specific programs in addition to identifying situations throughout the day where the student can practice or use the targeted skills.
- changes in device, access technique or selection set layout. May initially try out or practice more complex access methods using single level activity or story displays.
- teaching the strategies to the people supporting the child's learning.

Recognizing the child's intentions "Do you think they meant that?"

Iacono, Carter & Hook, 1998 found
- Difficulties applying published criteria that don't account for severe physical and / or sensory impairments
- Coordinated eye-gaze particularly challenging
- The absence of coordinated eye-gaze does not necessarily mean that communication is pre-intentional (i.e., not a reliable measure for children with complex sensory-motor challenges)

Porter & Iacono study (2006, 2007) *Communication assessment in preschool children with cerebral palsy and complex communication needs found that* recognition of the child's communication was influenced by the assessor / informant's understanding of the child's movement
  - Atypical patterns of movement
  - Associated reactions
  - Grading of movement
  - Origin of movement
  - Apparent variability (e.g. Influence of position & stability, specific supports required for success)
  - Associated difficulties (e.g. cortical vision impairment)
Learning to recognize child's communication was influenced by
- Increased familiarity with child's movement (conditions to support sensory processing)
- Looking for emerging patterns of behaviours
  - Movements
  - Sequences of movement / behaviors (may not be adjacent)
  - Contexts in which the behaviors occur, i.e. When does behavior occur? In relation to what other event / partner communication?

- Setting up an agreed method for the child to communicate a message,
  - Aided system, suggestions, e.g. "Look at me and I'll…"
  - Teaching movements for communication

When the child has poorly intelligible movement and inconstant responses
- •Develop familiarity with child's movement patterns
- •Set up "agreed upon" methods to communicate
  - assist the child to learn the "rules" – What you are responding to and what you think this means
  - select strategies to provide input and opportunities for observation and learning (scaffolding)
- •Work to increase consistency of a behavior / introduction of AAC forms
  - may move the child from pre-intentional to intentional (as in normal infant development) OR,
  - provide a "conventional" means of demonstrating underlying competence
- Acknowledge all performance.
  - Do not require consistent responses before acknowledging performance
- Pay attention to the "best performance" in the scaffolded 10 secs.
  - It's what happens in the 10 seconds that provides you with possibilities for stimulating communication development.
  - "Zone of proximal development"
- •Use ongoing dynamic assessment

How do we really know another person's intention (internal thought) until they can tell us in words what they intended?

- **We interpret & assign intent** based on our interpretation of another's behavior in a given context.
- This is influenced by our own knowledge, criteria, expectations and viewpoint.

But the child doesn't have a clear "YES", "NO" Can she use partner-assisted scanning?

Answering 'yes' and 'no' to random questions is much harder than using a yes/no just for accepting and rejecting items presented in a partner-assisted scan. This is because you need to fully understand the language of a random question and the context it is referring to. In addition, the answer to a yes/no question is hardly ever just 'yes' or 'no'. Having a way to indicate "I don't know" or "get my book" readily accessible whenever a yes/no question is asked is highly desirable. If the child gives no response to a random yes/no question, then interpret that as "not sure" or "not exactly" and suggest that they might want to use their book to say more about it. Be aware that partners can become concerned that children are inconsistent with their yes/no – often using it well during scanning, but not answering random questions. Understanding that accepting/rejecting a scanned item is easier than processing the language in a random question can help them to understand that the child's issue is not a consistent yes/no response, but it is more related to their capabilities to understand varied questions.

Learning a method to accept and reject for partner-assisted scanning
- Teach new partners, that a clear yes/no response may develop over time, and they will be important observers as part of the team figuring out what will work best for the child.
- You can begin using AAC prior to the development of a clear yes/no response. All children will need receptive input to learn their language system. Model possible methods to indicate 'yes', 'no' using partner-assisted scanning to access the communication book.
- Discovering and/or teaching movements for expressive communication may take some time.

- Initially respond to a smile, look, touch or any other behaviour that may indicate acceptance of the scanned option, but move on to shape a clearer means of signaling 'yes' as soon as possible. Note that smiling does not work well in scanning – spontaneous smiling to a funny word or an amusing thought can lead you astray! The message may be about something with a different emotional tone, making it difficult for the child to smile.
- There is frequently a period of exploration, where a range of different, less intelligible movements are interpreted within the context of communication, to discover possible ways for the child to indicate yes/no and initiate communication. Do your best to read the child's body language and interpret all possibly communicative movements. Think of babies and toddlers learning to speak for the first time. They may only use a word approximation, gesture or intonation, and we don't always know what they are trying to tell us, but we attribute meaning to their attempts, provide them with feedback and suggestions and over time they learn to communicate more clearly.
- Verbally reference (say out loud) the movement you observed and the meaning you assigned to this movement. This provides the child with feedback to understand your response and may stimulate attempts to produce clearer movements. A more experienced partner stating their observations and interpretations out loud, also assists new partners to observe and appropriately interpret the child's movements.
- After a period of exploration it is then necessary to agree on a particular manner for the child to communicate 'yes' and 'no' that is known and used by all communication partners. Initially accept less intelligible movements, gradually requiring more intelligible movements over time (shaping). Just as typically developing children learning to speak take many years to develop mature, intelligible articulation, children with complex sensory-motor challenges will need to learn, over many years, the sensory-motor control required to produce intelligible movements for communication.
- Use of both a confirmation and negation can make the communication more clear. This gives the child more control and is easier for the communication partner. Confirmation alone requires the partner to be very tuned in to timing of items presented and subtle responses from the child, adding a 'no' puts the child back in control of the pace.
- Consider the possibilities for learning given the child's sensory and motor capabilities in a range of positions and situations. Remember that you can teach movement over time. You may have a 'today' and a 'tomorrow' plan.
- Evaluate the relative ease and effectiveness of 'yes', 'no' options. Consider:
    - who will understand the child without training
    - the intelligibility in the short term
    - how guessable/conventional for community understanding in the long term
    - How efficient will it be for the child and the partner to use
    - Can the child independently initiate use or are they dependent on someone else setting it up
    - Might it interfere with the communication interaction or add to the complexity when using with partner-assisted scanning.
- Some children will also benefit from sensory motor programs to develop motor control and learn specific movements for communication. (PT, OT)
- Some children may benefit from the use of talking yes/no switches to give them and their partner clear feedback of their movements. The child does not have to activate the switch. A movement in the direction of the switch can be "read" by the partner and then the partner can activate the switch to provide feedback that she recognised the child's movement. The switches are held by the partner. If the switches were mounted, the child would require more accurate control of movement to target and also to stay away from the switches when not responding. This may produce more errors and result in less clear feedback. **NOTE:** The use of switches to learn movements for yes/no is temporary. The goal is to get rid of the switches as the child learns to use the movements more independently. Sometimes two

hands or fingers may give the child an intermediate target as the use of the switches are faded.
- If using left/right eye-gaze, it is important to have some 'marker' that stays with the child to remind partners which side is which response, e.g. 'yes', 'no' wrist bands, written on saliva-control scarf, or a lapel pin.
- Don't forget speech as an option for 'yes', 'no'. An important consideration for the use of more generalized vocalization, is not only the ease of initiation of vocalization but also if the ability to inhibit vocalization when they are not giving a response (including when the child is having an emotional response.

Parallel Programming
Children are juggling multiple sensory, cognitive, language and motor demands when learning to use aided language. It is important to create some balance for children in the relative complexity required for all of these demands. Parallel learning refers to the situation where you balance the relative demands by keeping some aspects of an activity easily within the child's capabilities when adding new, more complex demands. In keeping with this concept, a child may practice new, more complex, operational skills, e.g. access methodologies, movements, in activities where the language and/or non-movement, cognitive demands are relatively easy for the child. For example, practice use of a more complex access methodology using a single level activity display for a highly motivating activity.
This concept is often applied to developing the many skills required to use a speech generating device.
- Juggling the sensory-motor, language, and cognitive demands need to control a communication device or access a computer can be very overwhelming.
- Many individual components must be coordinated. For example:
  - **Sensory-motor demands:** motivation, strength, motor planning, muscle tone, endurance, motor automaticity, auditory filtering, auditory processing, reaction time, visual discrimination, visual scanning/memory, visual tracking, integrating multiple sensory inputs
  - **Cognitive demands:** motivation, cause/effect, initiating, discriminating purpose and function, developing cognitive schemas, making active choices, trial and error, problem solving, memory, shared knowledge of process

Language components: motivation, processing of language in activity, pragmatics, relationship to and monitoring of the communication partner, processing of questions, auditory filtering, processing of symbol set, syntax/grammar, attention to task, memory
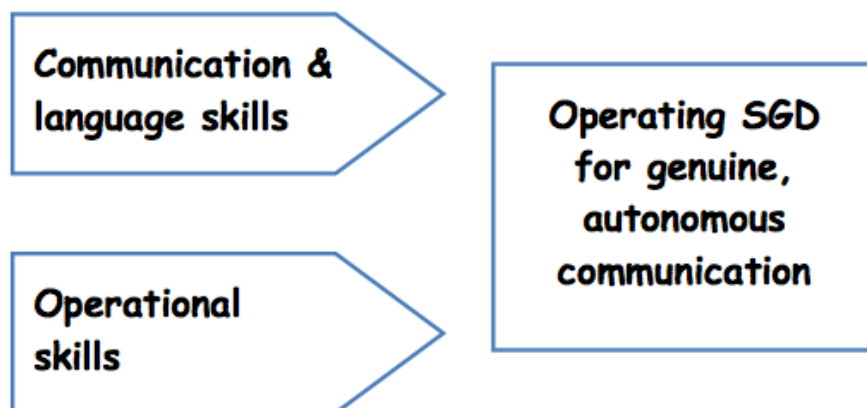- Working Memory can only deal with a limited amount of information at a time
- Cognitive attention is needed to focus on anything that is not automatic
- Problem of available working memory - what to focus on? - Activate the switch? What did she just ask me? Hold up my head? Who just walked in the door? What was that noise? What do I know about this? How could I answer that? Why does my stomach hurt?
- Memory is stored as patterns not individual details and must contain some variety in order to be generalised to a broad number of situations
- Once a pattern is learned it becomes automatic and operates subconsciously, until there is a need to use it or change it
- If something is not automatic yet, it will occupy the child's working memory instead of operating in the background
- Juggling multiple sensory, cognitive, language and motor demands: ASK?
  - What's easy for me?
  - What's difficult for me?
  - What's new?
  - What's automatic?
  - What requires undivided attention?

- What requires self-talk /thought to control/plan/problem-solve?
- Juggling explains inconsistency of performance
- For many children who have severe multiple challenges, motor control requires cognitive attention and effort
- We need to be helping children to get to a point where cognitive efforts can be redirected from the motor skill to the content of the task
- Children need practice in natural contexts, utilizing repetition with moderate differences, intent and purpose
- Children should not be tested using systems that they have not mastered to a level of automaticity
- Developing automaticity takes practice:
  - Thousands of Repetitions with Intent, Purpose, and Variation
  - Motivation Provides Intent
  - Natural Context Provides Purpose and Variation
- Determine the purpose or goal of an activity from the adult's and child's perspective Why am I doing this?

Learning involves more than just doing an action. The child must learn to connect a cognitive intent with the necessary body movements to achieve that intent. This is achieved when the intent automatically produces the movement without additional cognitive effort. The child may have motivation to do something but may not yet have connected with how to achieve it. For example: I see the drink, I want the drink, but when I think "get drink" the right set of movements doesn't happen – head turns away and arm pulls back – wrong patterns were sent to the muscles. Success requires: comprehension, motivation, intent, activity (context) and achievement with feedback that can be clearly perceived and processed by the child.

Long-term planning for parallel learning
- If we wait for everything to develop in a coordinated fashion, you will be waiting forever.
- We don't want to hold the child back in one area because of deficits or difficulties in other areas.
- We need to be careful that we continue to develop rich cognitive schemas and not just splinter skills.
- The answer to this problem is to work on individual components in parallel. Use functional and natural contexts to give the child opportunities to develop skills, where only one component is cognitively challenging them at a time. Provide a variety of these types of activities that challenge the child in all areas of development, but mainly just one at a time. Help the child make associations; see the relationships between skills that she is developing.

Communication & language skills

Operational skills

Operating SGD for genuine, autonomous communication

1. Learn and practice aspects of a multi-faceted complex task with many "difficult for me to learn and do" components separately in different activities – in parallel.   Start learning and practicing all elements NOW in different activities

2. As skill and automaticity develop, elements are joined together into whole activities. For successful use within the complex task. It is important to help child and his/her partners and team to understand purpose, connection / association between what they are doing now and the longer term aim.

This is a team process. The whole team needs to understand the long-term planning process in order to:
- Provide all of the teaching-learning opportunities required to build the knowledge, judgment and skills needed for the child to learn to independently operate a SGD for genuine autonomous communication
- Select strategies that are consistent with the eventual aim to operate a SGD in all of their daily environments
    - Plan for a switch setup that works for self-initiated communication at ANY TIME.
    - Practice eye-point from a variety of positions
- Initially introduce smart partner operating light-tech AAC system (paper communication book) with sufficient vocabulary for genuine communication and language development
- At the same time, provide opportunities to develop genuine motor control and posture and provide experiences accessing technology. This would include switch and/or eye-pointing play activities and access to simple speech generating devices (SGD). Single and sequential message devices support children to learn about the functions of speech output, e.g. talking at a distance, 'leaving it alone' until you have something to say.

Refer to:
Burkhart, Gardiner-Fox, Hanser and Wagner (2004), *Two Switches to Success: Access for children with severe physical and/or multiple challenges.*
http://www.lburkhart.com/hand2sw4s.htm
Musselwhite, C. & Burkhart, L. (2002) *Sequenced Social Scripts:* Companion CD to *Can we Chat? Co-Planned Sequenced Social Scripts*

As the child develops some degree of automaticity generating language to communicate and/or operating switches and/or eye-pointing to operate the device, access to more generative SGDs would be introduced.
- Depending on the child's operational skills, a page set comparable to their light-tech system may be put onto the device.
- For children who are still struggling with operational skills, but able to generate language using partner-assisted scanning, an intermediate stage of putting a simpler page set on their dynamic display device is done. This page set aims to have an increase effect for effort.
    - Communication functions and messages that are more effective with speech and/or written output are selected to clarify for the child why it is worth it to expend the extra effort to operate the device.
    - If infra-red access is available on the device, IR toy and environmental control features can also provide motivation.
- Regardless of the page set provided, all children will require a period of exploration, a time "to babble" using their device before expected to use it for genuine communication purposes only.
- Similar parallel learning processes may be required for children learning to access a SGD with direct access using hands or eyes. Some individuals with easy operation of a device through direct access, may begin learning to communicate with both a communication book and a SGD with a similar page set.

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Sensory processing challenges   (Based on presentation by Claire Cotter, 2007)

- The senses: hearing (auditory processing), seeing (visual processing), taste, smell, touch, tactile, vestibular, proprioception, and kinaesthetic.

- Senses which are essential for adaptation to our environment and learning more complex motor skills
    - the ability to modulate touch sensations through the skin and to discriminate the properties of objects by touching them (tactile sense)
    - to adjust one's body to changes in gravity and body positions and feel comfortable moving through space (vestibular sense)
    - to be aware of one's body parts and to move one's muscles and limbs in a coordinated way (proprioceptive sense)

- With optimal processing of all the senses, the child then has the ability to
    - interact successfully with the environment
    - plan, organize and carry out a sequence of unfamiliar actions (grade movement)
    - do what he needs and wants to do.
 = PRAXIS or MOTOR PLANNING


Hyporesponsive: Need more altering sensory input
Hyperresponsive: increased response to less altering sensory input (sometimes with set patterns of movement) or avoids certain sensations (may be perceived as negative).

Challenges to communication
- Early communication / gestural movements may be absent, inconsistent or difficult to observe as intentional.
- Specific difficulty with looking at the same time as moving hand to reach/point.
- Vocalization and speech sound production is often limited by significant oral sensory-motor challenges.
- Reduced / different sensory feedback on own movements and extraneous movements
    - •*I know you think you understood what you thought I said, but what I don't think you realize is that what you heard (saw) is not what I meant.*
    - •Is the partner looking where the child intended?
    - •Is the child moving in the way they think they are?
- Child's need for and seeking of additional (alerting) sensory input, avoidance of certain sensory input and/or difficulty managing multiple sensory inputs can limit the child's learning opportunities
    - Sensory seeking behaviors can distract child and partners from interaction and participation in learning opportunities
    - Avoidance responses to sensory input can limit participation and attention to learning opportunities
    - Different responses, sensory seeking can lead partners to make assumptions about child's learning potential and interest in interaction.
- •Interpretation of the child's communication is further complicated as they appear to have more movement available to them than they can effectively use for function.
- Motor planning – Dyspraxia
    - Rely on sensory feedback to plan movement – especially when learning a new skill.
    - Challenge to planning, organizing and carrying out an action or sequence of movements is necessary for gestural communication.

General strategies

- **Heavy work:** Pushing, pulling, lifting, carrying, crashing with body alignment, resistance and movement in space. Includes such activities as crawling, pushups, prone activities, pushing and pulling activities, going on the rockerboard, scooterboard, over the big ball
- **Deep Pressure:** •Brushing and joint input – strong, deep brushing, deep pressure massage and joint compression through aligned arms, legs, trunk and spine while child is maintaining postures:
- **Sensory diet** – provide appropriate sensory input **throughput the day** to enable the child to participates. The aim is for the child to self-regulate their own sensory requirements.
    - Initially experience a range of sensory motor experiences.
    - An individualized sensory diet which supports the child's learning and communication is implemented.
    - Recognize need for sensory input (type) to support function during the day
    - Learn to request type of input they require to function throughout the day.
- •**Discovering and teaching possible movements for communication**
    - Note the single movement point to communication display can be used to communicate lots of different messages
    - Note YES/NO movements with partner-assisted scanning can be used to communicate lots of different messages
    - Will need to teach gestural communication
- Observe response to **receptive input using a range of AAC modes** of communication including sign, gesture and aided language supports.
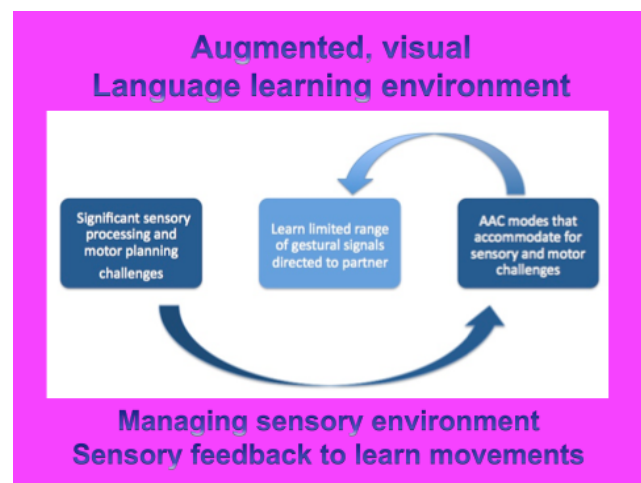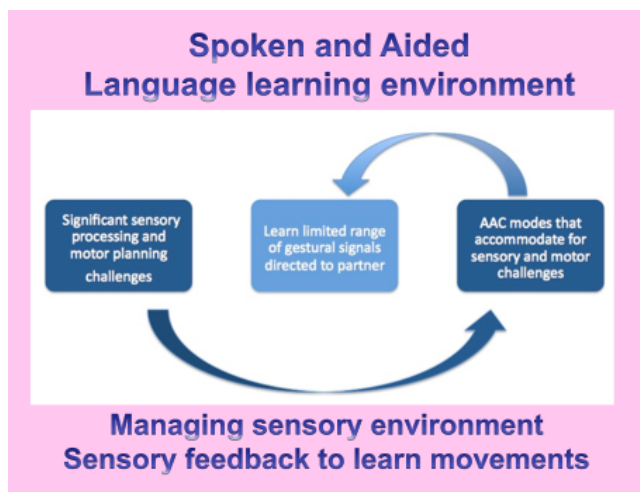

- **Access methods and aid design**
    - Sensory properties of the AAC system will need to be considered in relation to the child's sensory needs.
    - Less varied –complex movements
    - If needing support to understand communication intent may need to use pick-up and give show but may be
        - too stimulating (overwhelming) for children who are hyperresponsive, defensive or have sensory overload)
        - lead to sensory seeking (especially for children who are hyporesponsive and seek additional sensory input).

- **Educating communication partners** about the reasons for "different behaviors". Partners need to understand

- o why they are not spontaneously using the eye-gaze and gestural cues that typically confirm communication intent.
- o to be able to discriminate sensory seeking from communication movement.
- o to provide appropriate sensory diet to enable the child to move to communicate

<u>Pathway for children who have severe cognitive challenges, and limited ideas of what to say – possibly in addition to other challenges described above.</u>

For some children receptive input and general opportunities (and maybe learning movements for communication) are all that's required to stimulate spontaneous generative expressive communication. **Other children require additional teaching – learning strategies to stimulate expressive use of aided systems within ongoing interactions**
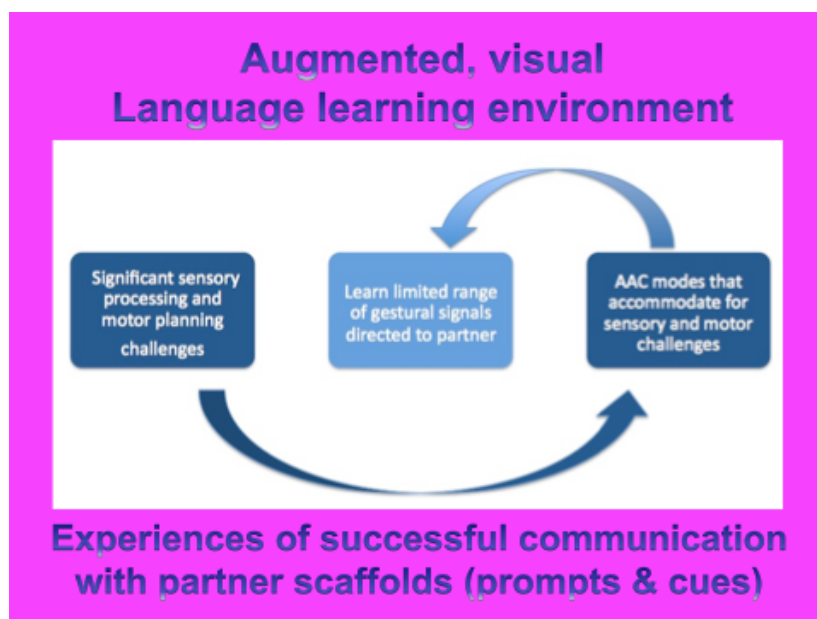
See section on <u>Scaffolding, additional prompts and cues</u>

<u>Building the community's capacity to support aided language development and autonomous communication:</u>

Adopt a shared set of beliefs. In an inclusive communication community:
- Everyone communicates
    - To understand others and be understood
- AAC is one way people communicate
    - Multi-modal communication
- Everyone's contribution is valued equally regardless of how it is expressed
    - Opportunity and response to AAC same as speech
- Autonomy is critical and over-rides everything else
    - Must be the child's message - even if she needs help to communicate it
    - Not just a response to the options provided by others

AARCH

Communication
- **A**utonomy
- **A**ccessibility
- **R**equirements
- **C**ompetence
- **H**abits – for communication at any time.

Communication happens "all the time"
- not just an activity
- Be prepared for communication at ANY TIME

Developing Habits to support autonomous communication
- Routinely ensuring the AAC system is readily available for use whenever the individual has something to say.
- Providing enough time for the person to communicate their own message in the manner / words they prefer

Development of healthy AAC Habits
- Motivation to prioritise another person's communication
- Influenced by beliefs & understanding of
  - Communication
  - Individual Autonomy
  - The purposes and critical importance of AAC to the individual with complex communication needs.

Consider the messages your intervention practices are sending
- First step – have the AAC system there
  - Problem-solve how you can carry and position it in all environments
  - Don't have to use it yet!
- Model communicating using AAC in existing, genuine contexts
  - Use existing resources
  - Problem-solve and model how they could use system
  - Scaffold other partners
  - Beware of using only special games and activities

Learning to provide opportunities for the child to communicate
- Understanding that communication can happen at any time
- Provide pauses
- Offer "Do you have something to say?"
- Better to OFFER 100 times so you don't miss the one time they have something to say
- Early on suggest pausing and checking if child has something to say right after a model - works well with opinions

Skilled person stimulating communication and language development
- Frequently uses the child's AAC systems to provide aided language stimulation
- May use additional teaching – learning strategies to stimulate the child's expressive use of aided systems within ongoing interactions.
- Frequent models of successful interactions using AAC throughout the day
- Verbal reference to:

- o what they are doing / responding to
- o what student is doing and what this means
- Talks other partners through the process ("Tell me and I'll help you tell ……")
- Accomplices partner to communicate
- Can use similar prompts and cues to the ones used with children
- Gives "permission" and encouragement to others to use AAC systems
- Re-directs others to communicate directly with student
- "Safety net" – supports successful interactions & confidence to try
- "On the spot" ideas
- Supports new partner's problem solving – instead of telling them what to do
- TEACHES the new partner to "fish" – be independent
- All of these strategies apply to peers as well
  - o Eventually peers request specific assistance as required
  - o Also see peers teaching each others (initially scaffolded by "skilled adults")
  - o Advantages of mixed age groups in early years?

Remind people have a conversation, interact & have fun

Coach people to be kind to themselves and set reasonable goals for learning
- Establish new habits
- Practice
- Don't worry about being perfect
- Communication is messy

Communication is messy !
- Dynamic and raw - not edited and polished
- Not all thought out ahead of time
- Not sterile like performing a script
- Not a one way process - dependent upon the communication partner's responses
- When the goal is communication, we need to accept and expand upon whatever the child does / says

Communication partners need learning opportunities
- Models
- Practice (with scaffolds)
- Support - Encouragement
- Information

Community capacity building
- Whole community
- Whole school / service
- Knowledge, judgment & skills
- Understanding
- Attitudes, beliefs
- Policies and practices
- Inclusive of communication diversity

Communication Access
Communication Resource Centre, Scope, Victoria (2011)
www.scopevic.org.au/index.php/site/whatweoffer/communicationresourcecentre/communication access

"Communication Access is about communicating with people who do not use speech or have speech that is difficult to understand. It makes everyone in the community aware that they can play a role in removing communication barriers."

CRC (2011) defines communication access as about being able to go into shops and services and know that people will
–treat you with dignity and respect talk directly to you
–give you time to get your message across
–listen to your message
–be willing to use other methods of communicating

"the most important thing is for all of us to be aware that communication is a two-way process. Both people need to take some responsibility for making the communication effective and successful."

Acknowledge that Communication is a priority
"Communication is the essence of human life"   ASHA, 1991, p.9

Communication allows us to
- make contact with other people
- establish relationships –   express our personality
- demonstrate and share our knowledge
- ensure that our needs are met and our wishes are considered

Communication is a key life skill!!!!

"Have you got anything better to do? Listen to me: There is nothing more important for you to be doing right now than to learn how to express your thoughts and feelings to other people.

I know how painful it is when people stare at you and think that you are somebody other than who you really are because of how you look on the outside. Believe me this won't change unless you have some way to tell people who you are on the inside."

Michael B. Williams, 1996.

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