

Engineering the Environment for Communication



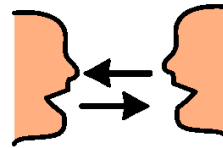
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Communication

- Happens all day, every day, in every situation
- Two way process



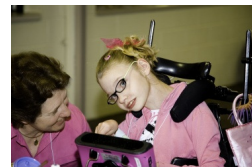
Communication helps us to

- Chat
- Get what we need and want
- Enhance our lives
- We can.. greet, comment, make requests, protest/reject, give opinions, answer questions and more!



Aided AAC

- Aided augmentative and alternative communication (AAC) systems are recommended for children with complex communication needs (CCN).



Aided AAC



bear

- Messages (words, phrases, sentences) are symbolically represented as photographs, line drawings, tangible objects or letters/words.



Aided AAC



- Low/light/easy technology
- High Technology



What do we know about aided AAC use?



Many people who use AAC

- (Kraat, 1985; Light, 1989; Muller and Soto, 2002)
 - Play a passive role
 - Rarely initiate interaction
 - Express a limited number of speech acts
 - Use restricted linguistic forms
 - Limited opportunities to interact with other people



What we know

- Communication displays and devices are often not used
- AAC users are typically responders not initiators
- Interaction patterns focus on “closed” questions such as “What do you want?”
- Conversational partners control interactions (turn taking is unequal)
- Peer interaction is minimal

(Kraat, 1985)



AAC should be...

- Used frequently, interactively and generatively to express a wide range of communicative intents;
- Occurring during at least 80% of ongoing classroom programming (as speech or manual sign use is);
- Being used to mediate communication with classmates as well as personnel (ie teachers, aides, therapists, clinicians);
- Being designed and implemented in as time and cost effective a manner as possible.



Four main issues

- Lack of Modelling
- Lack of Access to Vocabulary
- Communicative Competence
- Passivity/Learned Helplessness



Communicative Competence

- Janice Light (1989) defines communicative competence as "... the ability to communicate functionally in the natural environment and to adequately meet daily communication needs."



Communicative Competence

- *Linguistic Skills* include receptive and expressive skills in the native language spoken by the family and broader social community.
- *Operational Skills* refer to the technical skills required to use the AAC system(s) accurately, efficiently, and appropriately.
- *Social Skills* refer to knowledge, judgment, and skills in the social rules of interaction.
- *Strategic Skills* refer to compensatory strategies that may be utilized by individuals who use AAC to overcome functional limitations that restrict their effectiveness as communicators.



Linguistic Skills

- The BEST way to improve someone's knowledge of how to use the linguistic code of their AAC system is to MODEL using it.
- This is known as Aided Language Stimulation



Aided Language Stimulation

- Prospective users must be provided with frequent examples of interactive, generative use to acquire any semblance of proficiency.

Goossens', Crain and Elder (1988); Goossens' (1989)



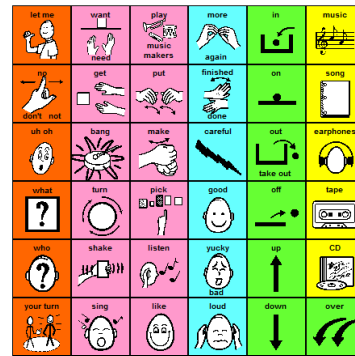
Aided Language Stimulation

- Likewise, it is difficult for a nonspeaker to become a proficient AAC user if other people never model interactive use of their system during all aspects of the day.
- If children are to gain proficiency in using their aided AAC systems, others must begin to use the children's AAC system to communicate with them.



Aided Language Stimulation

- If you (as a person proficient in language) cannot use a communication system or display throughout an interaction then how can you provide ALS?
- If you cannot use it, is it designed well?
- By modelling how to use a display to initiate and maintain communication, you show a student how to initiate and maintain – not just respond!



So how do we make AAC more effective and used more?



We need to look at

- What sort of communication system to use?
- System design issues
 - Vocabulary selection
 - Access needs
 - Current and future needs
- System Training Issues



Classroom based systems

- Selects the content of the system based on the communicative needs of the classroom as a whole
- THEN strives to work within this framework to individualise systems to the unique needs of the students
- May be easier to begin ALS with
- Doesn't give the student options outside of the classroom



Speech Generating Devices

- Another tool for getting communication going
- Need to complement and supplement low technology



Selection techniques



- Children are inappropriately placed on selection techniques that are too physically taxing to promote meaningful communication exchange.
- Must find the selection techniques that will allow the nonspeaking person to access the most messages possible, in the least amount of time, with the least amount of effort.

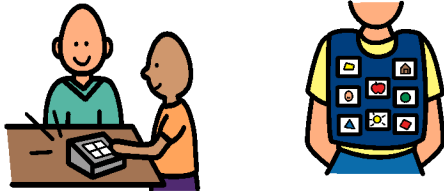


Current and Future Needs

- Displays need to keep the child's current motor and visual abilities in mind but provide room for growth



System Training Issues



Natural environments

- Where the child is most likely to be using their AAC system eg. School
- Increasing shift to train a child within the environment we wish to see the skills manifested



“Osmosis” training

- Children are provided with AAC systems and expected, by osmosis, to know how to use their AAC system frequently, interactively and generatively.



Meaningful learning

- Often we teach in stimulus response activities eg. Find the shoes, find pants
- Need to teach in contexts that allow child to see symbols being used repeatedly, interactively and generatively during meaningful activity



Delineating classroom activities

- Aided Language Displays are NOT choice making boards.
- Choice making boards supplement ALDs.
- E.g. in music time a choice board of songs is followed by boards for singing the songs.



Prioritize Classroom Activities

- Frequency of occurrence
- Motivation
- Coverage – one activity completely engineered or multiple activities partly engineered?



Phase II

- Generating Concentrated Message Pools
 - A functional group of messages that will allow the facilitator and the child to communicate frequently, interactively and generatively during the conduct of that activity.



Concentrated Message Pool

- Words or sentences?
- Based on the cognitive level of the user, the selection technique, the time dependent nature of the activity.



What messages?

- Should enable you to keep a running commentary of an activity.
- Should always be messages that the user could “say”.
- 16 - 36 messages per activity



Rank Order the Message Pool for each target activity

- The top 9 items will be on a 9 cell board
- The top 12 on a 12 cell board
- Etc.



Food preparation – word based

1. Let me	13. Careful	25. Burn
2. More	14. Finished	26. Hurry
3. Get	15. Turn on	27. Set the timer
4. Open	16. Turn off	28. Cold
5. Put in	17. Hot	29. Cook
6. Stir	18. Look	30. Cut
7. No, don't	19. Smell	31. Where
8. Yuck	20. Pour	32. What?
9. Uh oh	21. Make	33. When?
10. Taste	22. Spill	34. Please
11. Take out	23. Bowl	35. Spread
12. Good	24. Spoon	36. Close



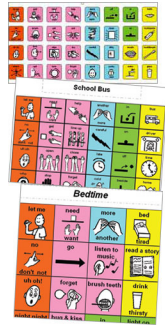
Food preparation – Phrase/Sentence based

1. Let me	13. It's hot	25. It's done
2. Put it in	14. This is fun	26. Turn it off
3. Open it	15. Tastes yummy	27. Wanna save it for later
4. Turn it on	16. Not done yet	28. It's your turn
5. Need some more	17. I know how	29. Help me please
6. No, don't!	18. Take it out	30. Smells good
7. It's yuckie	19. That's too much	31. My mum makes this
8. Uh ohhh	20. I think it's burning	32. It's all gone
9. Be careful!	21. That's my favourite	33. What a mess!
10. You forgot!	22. It's not your turn	34. It's cold
11. Is it done yet?	23. Can I take some home	35. Close it
12. That's enough	24. Don't forget	36. Gotta clean up



Engineering Dynamic Displays

- Preschool
 - Book
 - Boardmaker boards - CD
- Adolescent
 - Book
 - Boardmaker boards - CD
- Training Environments
 - Book
 - Boardmaker boards - CD
 - DynaVox Series 4/Series 5



Phase III

- Determining Selection Technique and Display Format
- Focus in this phase is on physical skills



Selection Technique

- Finger point, Fist point, Eye point, Light beam, Head pointer, Scanning
- Must not be too physically taxing
- Can work on a new technique in other activities while an easy technique is used for communication



Display Format

- 9 cell, 12 cell, 16 cell, 32 cell, 36 cell
- Matrix or horse shoe



Phase IV

- Creating communication displays for each activity



(And don't try to do it all at once!)



Selecting number of items

- As well as the physical information already considered, need to consider:
 - Cognitive skills
 - Linguistic skills



Selecting messages

- Which should go in each display format for each activity?




Design Master Displays

- Low tech
- Any SGDs?
- Group symbols for language flow



Miscellaneous			Descriptors			
Verbs			Prepositions			
let me	want	help	more	on	bead	← Nouns
no	get	put	smashed	up	string	
don't	net		gone			
uh oh	find	take	careful	through	knot	
what?	make	forget	all gone	hole	necklace	
how many	look	fall	pretty	bad	color	
your turn	bang	little	big	short	long	




Making Displays Readily Accessible in the Environment





Storing displays

- Must be stored in close proximity to where they are needed
- Must be stored in a way that helps with quick access and set-up
- E.g. in dress-up box, on back of bookshelf, on walls, in plastic bucket, inside game box, with props, in eye gaze arrangement



Aided Language Stimulation

- May help to “script” activities
- Needs to occur at least 80% of the time
- Slow and a few concepts to begin with, gradually increasing in speed and complexity.



Outcomes

- Fabulous!
- Much more competent AAC users
- AAC users using more communication functions
- Just using AAC more!



The idea of "Engineering the Environment" comes from the ground breaking work of Carol Goossens', Ph.D., CCC-SLP, Sharon Sapp Crain, M.S., CCC-SLP and Pamela S. Elder, M.A., CCC-SLP.



Thank-you for coming!

