Augmentative and Alternative Communication

Review Course for Assistive Technology Practitioners & Suppliers

Learning Objectives

- Understand the difference between speech and language.
- Recognize a person who can benefit from a Speech Generating Device (SGD) and refer to a SLP with AAC skills and knowledge.
- Recognize types of SGDs and their features along with typical control interfaces

Reasons to use AAC

- Establish a means of communication & social interaction
- Promote language and cognitive development
- Enhance education and work opportunities and social participation
- Support speech development and/or clarify speech production

Alternative and Augmentative Communication

- Should be considered when:
  - Speech and language do not develop or
  - When speech or language is lost
- Speech: the motor mechanisms that produce understandable spoken communication
- Language: the ability to communicate words and concepts through sounds, gestures or writing.

Speech vs. Language Disabilities

- Speech disability examples: voice sound
  - Dysarthria- inability to produce understandable speech sounds
  - Apraxia- inability to plan & coordinate the complex motor process of speaking
- Language disability examples: concepts
  - Expressive Aphasia - cannot find the word to express intent
  - Receptive Aphasia - cannot recognize the meaning of the words said by others.
  - Developmental disability - failure of language system to develop

Speech and Language Disabilities

- Affects 2 million Americans
- A disability that severely impacts development, participation, education, employment, and independent living.
- A **speech language pathologist** is the leader of this team with participation from other team members for access, positioning, and mounting.

Medical Diagnoses Needing AAC

- CVA (Stroke)
- Traumatic Brain Injury
- Down Syndrome
- Cerebral Palsy
- Degenerative Diseases: MS, ALS, Freidrich's Ataxia

Low Tech AAC

- 50% of AAC devices:
  - Letter boards
  - Symbol boards
  - Eye-pointing with an **E-tran** board
  - Gestures
  - ASL (American Sign Language)
  - Finger spelling
  - Writing or typing

High Tech AAC: SGDs

- Dedicated AAC devices - *only* used to produce speech and language.
  - Benefits: Many features, powerful strategies for speeding communication and storing language, many send IR signals and can perform computer keyboard and mouse emulation.

High Tech AAC: computers

- Non-dedicated - also function as a computer; uses AAC software
  - Benefits: computer available for email, Internet & other software.

Matching Disability Types and AAC Systems

Consider the type of disability
- Language
- Speech
- Vision
- Motor Control
- Ambulation
- Cognition
- Memory

Consider the features of the SGD.

Voice Output Devices

There are 2 ways to produce voice output:
- **Digitized speech** - human voice is recorded on a microchip
  - Usually easier to understand, sounds very human, can be age, gender and accent specific.
- **Synthesized** - software produces speech according to pronunciation rules.
  - Easily produced for many languages, less programming is needed to create a functional device.

The Importance of Evaluation

- Assess the individual's history and communication environments
  - Institutional
  - Community
  - Educational
  - Vocational
- Assess current communication ability
- Assess learning ability
- Determine support and motivation of communication partners

The Importance of Evaluation

- Utilize Speech Therapist with AAC Training
- Hands-on with actual devices vs. simulation
- The Team: assess access method, placement & mounting of device, visual requirements
- Consider system growth – expandability to meet potential communication capacity
- Funding

Eval: Special Considerations

- Appropriate positioning facilitates access.
- Consider usual environments: bed, wheelchair, walking around the community.
- Who are communication partners?
- Client comprehension, vision, hearing and literacy
- Vocabulary Size: 2 to hundreds of thousands.
- Selection set complexity: 2, 4, 8, 18, 32, 128
- Vocabulary Organization: Levels and/or Themes
- Rate of speech: normal = 175 words/min.
  - But with SGD = 80 / 50 / 15 / 5

SGD Features

Control Interface is a key factor

- Direct Selection
  - All selections are present
  - Select with a finger or pointer
  - Mouse input
- Indirect Selection - Scanning
  - Wait for selection to be offered, then select.
  - Type of scan
  - Auditory scanning

Features: Rate Enhancement

- Abbreviation Expansion: Letters, numbers, & codes
- Word Prediction and Word Completion
- Vocabulary Expansion: learns words
- Pre-stored vocabulary

Features: Vocabulary Storage

- Alphabet Keyboard
- Word / Phrase / Sentence / Speeches
- Picture Symbols
  - Semantic Compaction or Minspeak (Baker, 1982) uses symbols with multiple meanings, allows grammatical forms, has *core* and *fringe* vocabulary
  - Pre-made vocabulary pages for targeted user groups with easy customization
  - Picture Communication Symbols (Mayer-Johnson)
  - Bliss Symbols

Features: System Output

- Display
  - Size
  - Color
  - Fixed
  - Dynamic
- Speech
  - Digitized (Digital recording)
  - Synthesized (Phonemic or Diaphone synthesis)
- Print
- Peripherals - Infrared signal to control devices in the environment

Outcomes

- Communication competence
  - Engage and show interest in others, take turns in conversation, responsive to partner
  - Measures of rate or vocabulary usage
- Educational achievement
- Vocation and employment
- The Future
  - Wearable?
  - Computational advances?
  - New selection methods?

Some Web Resources

- AAC Institute http://www.aacinstitute.org/
- Communication Aid Manufacturers Association (CAMA) http://www.aacproducts.org/
- ISAAC - the International Society for AAC http://www.isaac-online.org/
- YAACK - AAC for young children http://aac.unl.edu/yaack/