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The State of the Science in AAC – current status and future directions

Getting some experts together to gauge the direction of prevailing currents and trends.... This is basically why the AAC-RERC recently held its State of the Science Conference (SOSC) in conjunction with the *21st Annual International Technology and Persons with Disabilities Conference* in Los Angeles. During three fully-packed days, more than 70 invited participants— researchers, individuals with complex communication needs, family members, clinicians, educators, policy makers, advocates, manufacturers and developers from within and outside the AAC industry— listened to, commented on, and discussed a wide range of topics. These topics related to the current status of, and potential future directions for, AAC.



The following paragraphs will provide a brief summary of each of the topics that partners presented during the March 2006 conference. Visit the [SOSC presentations and comment page](#) on the AAC-RERC website to see the PowerPoint slides from each presentation. Feel free to provide comments and share your thoughts about the subject with the authors. Articles encompassing the presentations and subsequent discussions are currently being prepared for publication in the *AAC Journal*. You will also want to read the April 2006 issue of [Augmentative Communication News](#), as reported by Sarah W. Blackstone, which is dedicated to the SOSC and provides more details on each of the six presentations.

Check out the pictures of the conference below, too.

Key Principles in AAC

Sarah W. Blackstone, Michael B. Williams, and David P. Wilkins

The first presentation at the Conference focused on six key AAC principles that have guided activities within the AAC-RERC since 1998.

1. People who rely on AAC participate actively in all AAC-RERC activities.
2. Widely accepted theoretical constructs are specifically addressed in the design and development of AAC technologies and instructional strategies.
3. AAC technologies and instructional strategies are designed to support and foster the abilities, preferences and priorities of individuals with complex communication needs, taking into account motor, sensory, cognitive, psychological, linguistic and behavioral skills, strengths and challenges.
4. AAC technologies and instructional strategies are designed so as to recognize the unique roles communication partners play during interactions.
5. AAC technologies and instructional strategies enable individuals with complex communication needs to maintain, expand and strengthen existing social networks and relationships and to fulfill societal roles.
6. AAC-RERC outcomes are realized in practical forms, such as guidelines for clinical practice, design specifications and commercial products. The social validity of these outcomes is determined by individuals with complex communication needs, their family members, AAC manufacturers and the broader community.

Access to AAC: Past, Present, and Future*Howard Shane, Jeff Higginbotham, Susanne Russell, and Kevin Caves*

Presenters on this subject sought to broaden our perspectives on access to AAC methods over time, reviewing history from the 1940s (letter boards and typewriters) to the present (dynamic displays and speech generating devices). They discussed challenging access issues, communication rate, and the potential of new access technologies – including gesture recognition, dysarthric speech recognition, adaptive scanning, use of ambiguous keyboards, utterance-based devices, eye-tracking and brain interfaces. SOSC participants then provided a variety of questions that researchers can consider for the future of AAC, such as:

- How can we combine the strengths of different modalities?
- Can AAC technologies learn to ignore extraneous movements?
- Are we proceeding from an adult model and trying to apply it to children? (again!)
- What access considerations should we be emphasizing for children? For individuals with significant cognitive challenges?

Interconnectivity: Enhancing AAC Connections*Frank DeRuyter and Kevin Caves*

This SOSC presentation highlighted ways technologies link together, with a special focus on how speech generating devices (SGDs) currently support (or restrict) the use of mainstream technologies. DeRuyter and Caves discussed three areas that affect the ability of individuals with complex communication needs (CCN) who rely on SGDs to access commonly used mainstream technologies: Public policy, participation of individuals with CCN, and technological developments.

The discussion then turned to how the potential of the digital age is not being realized for people who rely on SGDs to communicate, and participants offered suggestions for closing the digital divide. SOSC participants felt that enhancing connectivity for individuals who rely on AAC will require support from the broader technology industry and from the government, as well as from AAC manufacturers.

Beginning Communicators: Improving AAC Outcomes*Janice Light and Kathryn Drager*

The Beginning Communicators presentation highlighted the use of AAC with young children and others with CCN who are just starting to develop language, literacy, and communication skills. Light and Drager reviewed what they have learned from their research, such as 11.5% of preschoolers in special education services can benefit from AAC, SGDs are often difficult for young children to learn or to use as they are currently designed, and family members can be taught to modify their communication behaviors to support language and communication development. The researchers also discussed a current study at Penn State that has netted data that lend strong support to the need for beginning communicators to have access to age-appropriate AAC technologies and instructional strategies.

The SOSC participants agreed that there are still many unanswered questions, such as:

- How will AAC manufacturers enhance the appeal of AAC technologies for children?
- How will AAC manufacturers reduce learning demands?
- How will AAC technologies allow facilitators (parents, teachers, therapists) to program “on the fly”?

- How will AAC technologies be designed in ways that can meet the changing developmental needs of young children and make developmental transitions more seamless?

Adolescents/Adults with DD: Enhancing Participation & Access to Meaningful Roles

David McNaughton and Diane Nelson Bryen

McNaughton and Bryen addressed ways in which AAC technologies and instructional strategies can enhance participation and increase access to meaningful adult roles for adolescents and adults with developmental disabilities and CCN. McNaughton described a research project designed to assist adolescents and young adults in dealing with a range of problems, issues, and barriers. The study clearly demonstrated that those who rely on AAC technologies and strategies can benefit from peer mentoring over the Internet. Further research showed that success in college requires individuals to have strong literacy skills, a competitive general education high school background, and access to a computer-based AAC device. SOSC participants noted that all college students today rely heavily on email and the Internet. This means that individuals with CCN must use AAC technologies that can easily connect to mainstream technologies, i.e., interconnectivity is important.

Other topics discussed included the unacceptably high incidence of abuse, barriers to employment (societal prejudice, technology difficulties and breakdowns, lack of transportation, the need for assistance with activities of daily living), benefits (flexible schedule, working from home) and disadvantages (equipment issues and limited social interaction) of telecommuting, and how success in fulfilling desired adult roles is often dependent on the ability to communicate and to find needed supports. SOSC participants agreed that to assume adult roles and participate in one's community, adolescents and adults with developmental disabilities and CCN need access to AAC technologies and strategies.

Adults with Acquired Disabilities: Use of AAC to Enhance Social Participation

David R. Beukelman, Susan Fager and Laura Ball

This presentation focused on adults with acquired disabilities and degenerative diseases who use AAC technologies and strategies to maintain social participation. Beukelman presented research on demographics, acceptance and use, the types of AAC approaches people rely on over time and the kinds of supports they may require. In addition, he reviewed information about the use of AAC approaches with individuals who have chronic/severe aphasia, progressive aphasia and dementia.

Medical practices, acceptance and use by individuals with CCN and their family members, and the design of AAC technologies can affect the use of AAC technologies and strategies when adults have acquired conditions. Extending life may increase the need for AAC interventions that will enable these individuals to maintain communication and their quality of life. Increased insurance coverage and familiarity with AAC technologies have fostered broader acceptance and usage. Beukelman discussed how different diagnoses (ALS, traumatic brain injury, brainstem impairment, aphasia, Parkinson's, etc.) affect how, and to what extent, AAC technologies are used.

SOSC participants noted the aging of the general population and expressed concerns about the limited number of professionals who are currently prepared to provide AAC services to adults with acquired conditions. Participants also discussed the key roles family members play in successful AAC interventions and considered ways to deliver instruction and support to these

individuals.





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