

Outcomes and Benefits in Assistive Technology Service Delivery

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We acknowledge that substantive advancements in the knowledge base of the field of assistive technology (AT) this past year, though our understanding of the complex nature of AT outcomes and benefits has yet to come fully into fruition. However, progress is reflected through a number of important scholarly works, including (a) *The Handbook of Special Education Technology Research and Practice* (Edyburn, Higgins, & Boone, 2005); (b) the posting of evidence-based findings and AT matches to support instruction of academic skills for students with disabilities (Hasselbring, Lott, & Zidney, n.d.; Peterson-Karlan, Wojcik, & Parette, 2006; Silver-Pacuilla, Reudel, & Mistreet, 2004; see <http://www.techmatrix.org/>); (c) various research reports of projects participating in the National Center for Technology Innovation (NCTI, 2005) 'Technology in the Works' competition; and (d) research reports of our two national AT outcomes projects (Assistive Technology Outcomes Measurement System [ATOMS], 2006; Consortium for Assistive Technology Outcomes Research [CATOR], n.d.; F. DeRuyter, personal September 25, 2006). Finally, use of specific research methodologies designed to demonstrate AT effectiveness, such as concurrent time series designs (Peterson-Karlan, Wojcik, & Parette, 2006; Smith, 2000) and alternating treatment designs (Chan, 2006; Langone, Levine, Clees, Malone, & Koorland, 1996; MacArthur, 1999; Van Hull & Hux, 2006) also hold great promise.

Such encouraging activities should continue to guide the research, development, and implementation efforts of our readers who are invited to disseminate their findings in *ATO*B.

In this issue of *ATO*B, a plethora of AT issues is addressed, calling attention to the need for concerted and focused efforts for quality research and evidence-based practices. Our lead article, "The State of Assistive Technology: Themes from an Outcomes Summit," focuses on a national AT outcomes summit held last December in Chicago (see <http://www.nationaltechcenter.org/partnership/seatcenter.asp>). Hosted by the Special Education Assistive Technology (SEAT) Center at Illinois State University, the Department of Special Education at the University of Kansas, and the National Center on Technology Innovation, and with sponsorship by Ablenet, Inc., Don Johnston, Inc., Freedom Scientific, Kurzweil Learning Systems, and TextHelp Systems, Inc., summit participants addressed a cadre of issues related to the outcomes and benefits of AT. In this article by Phil Parette, George Peterson-Karlan, Sean Smith, Tracy Gray, and Heidi Silver-Pacuilla, key questions presented to Summit participants included: (a) *What are the current challenges with the use of technology and AT in assessment of educational outcomes?* (b) *How do these challenges affect the assessment of writing, reading, math, and other content areas?* and (c) *What is needed to measure the impact of AT on educational progress?* Themes that emerged and

which are discussed include (a) assessment, (b) evidence-based research in AT effectiveness, (c) professional preparation, and (d) technology generalization. Special future issues of *ATOB* are under development focusing on key issue areas identified at this Summit, with the next AT Outcomes Summit tentatively being planned in conjunction with the ATIA 2007 Conference.

In the second article, “Perspectives of Outcome Data from Assistive Technology Developers,” data from vendors regarding outcomes in AT service delivery are presented by Kathy Rust and Roger Smith. The investigators queried both research-based federally funded projects and commercial AT product developers. Developers noted the usefulness of outcomes data, particularly in the development process if outcomes information was available. Interestingly, commercial manufacturers reported cost as being different from other outcome dimensions and rated this factor as having lower importance. The investigators also found formal research methods being employed by both groups more frequently than anticipated.

In the third article titled, “A Case Study Model for Augmentative and Alternative Communication Outcomes,” Katya Hill describes a basic case study format for documenting augmentative and alternative communication (AAC) intervention. Designed to ensure reliable and valid measurement of performance and outcomes for evidence-based practice (EBP), the approach is applied in a case study of an adult with cerebral palsy who relies on AAC. Of great interest to this journal is the presentation of *diverse* perspectives related to AT outcomes and benefits, particularly from consumers.

In the fourth article, “AAC, Employment, and Independent Living: A Success Story,” a consumer perspective is presented by Carol

Isakson, Sheryl Burghstaler, and Anthony Arnold. The third author describes his experiences growing up in North Dakota and the challenges presented by having both a physical disability and relying on a variety of AT devices that supported both his education and development of communication skills. Positive outcomes in employment and independent living are described in this poignant account, resulting from a combination of external factors and the consumer’s internal strengths.

In the fifth article, “An Action Research Study of Computer-Assisted Instruction Within the First-Grade Classroom,” Tara Jeffs, Anna Evmenova, and Sandra Hopfengardner Warren describe an investigation using *WordMaker* with 18 first-grade students having varying levels of reading ability. Over a 10-week intervention period in a co-teaching classroom, a significant difference was found in pre- to posttest performance in the areas of decoding and spelling skills. The authors discuss the potential of *WordMaker* to support other classroom curriculum activities (e.g., spelling and decoding) *for all students*.

In the sixth article, “Comparison of Semantic versus Syntactic Message Formulation: A Pilot Study,” co-authored by Rupal Patel, Katherine Schooley, and Rajiv Radhakrishnan, a description is provided of the implementation of two prototype voice output communication aids (i.e., that used syntactical ordering of icons and semantic frames approaches) to compare the respective methods of graphic symbol message formulation of eight typically developing children (7-10 years of age). Performance of the children using the prototypes was compared with regard to accuracy, speed, complexity, and preference. Interestingly, the researchers found that all participants created equally complex and grammatically accurate sentences using both prototypes suggesting the potential of semantic frame-based

message formulation as a viable alternative to conventional AAC methods based on syntax. Although typical children were used in the study, the researchers noted the need for future research extending these findings to children with disabilities.

In the seventh article, "Seeing Chemistry Through Sound: A Submersible Audible Light Sensor for Observing Chemical Reactions for Students Who Are Blind or Visually Impaired," Aaron Musser, Josh Han, Erika Briody, Chip McArtor, Kyle Gregory, Cary Supalo, and Thomas E. Mallouk describe development of a hand-held device designed to output light intensity as an audible tone. Through creation of an audio signal, a submersible audible light sensor (SALS) allows students who are blind and visually impaired to 'observe' chemical reactions in a solution in real time, thus enabling them to independently perform a wide range of experiments. The authors purport that the SALS device may be refined further to provide vibratory and visual outputs for students with learning or physical disabilities.

We hope that this issue of *ATOB* provides insights to our various stakeholders regarding approaches for documenting AT outcomes and benefits. We also note that complementing this issue of the journal is a wide array of presentations scheduled at the ATIA 2007 Conference on January 24-27, 2007, in Orlando (see <http://atia.org/> for Conference information). This meeting has become one of the foremost AT consumer and professional venues, with a wide array of important program offerings available to participants.

Many readers may be unaware that *ATOB* is provided at no cost to the public, and hence, sponsorships are increasingly important to support this publishing effort. We would like to express appreciation to those sponsors of the journal recognized herein, and encourage

the many vendors of AT devices to support the commitment of ATIA and the SEAT Center in producing this publication. We also express appreciation to our diligent Editorial Board members who consistently make it possible to provide quality feedback to authors who submit manuscripts for publication consideration. In an effort to expand the Editorial Board, we will be announcing a Call for Reviewers at the ATIA 2007 Conference, requesting participation from vendors, institutions of higher learning, government, not-for-profits, and consultants in the field. Information regarding the application process will be posted at the ATIA website in January. Additionally, information will be posted regarding the availability of hard copies of the journal for those individuals and institutions who are interested.

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