The State of Assistive Technology Services Nationally and Implications for Future Development

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Abstract: On December 10, 2004, selected education and assistive technology (AT) leaders were invited to an AT visioning activity that intended to lead to the development of a national AT agenda. Participants were presented with seven questions to stimulate thinking regarding both the status and future of AT service delivery. Themes resulting from the discussion of each question were identified during the course of the meeting and were presented back to participants for consideration and refinement. Specific issues are described, coupled with recommendations for systematic improvement of AT services nationally.

Though the field of assistive technology (AT) service delivery is still relatively young, many advances have been made in the knowledge base in the last several decades (Edyburn, 2000, 2001, 2002, 2003). In recent years, greater emphasis has been placed on the outcomes of what have been deemed to be best and emerging practices in the field (Edyburn, 2004). With numerous issues and forces currently impacting the field of assistive technology (AT), a need exists to better understand and integrate the variety of issues, perspectives and practices within the existing AT service delivery system nationally in order to deliver AT services more effectively. Of particular importance are legislative forces, including the (a) No Child Left Behind Act of 2001 (P. L. 107-110) that emphasizes student achievement; (b) Assistive Technology Act of 2004 (PL 108-364) that emphasizes direct delivery of AT services to persons with disabilities; and (c) emphasis on AT consideration for all students with disabilities articulated in the Individuals with Disabilities Education Improvement Act of 2004 (H. R. 750), and accompanying language of highly qualified personnel within the legislation.

To begin to synthesize perspectives regarding how these powerful forces are impacting the AT field, and to better understand the context for identifying AT outcomes and benefits from a national perspective, personnel at the Special Education Assistive Technology Center at Illinois State University extended invitations to a cadre of AT leaders to participate in a national planning activity. This event, Day of Visioning: Increasing Access to Assistive Technology, was hosted in Bloomington, Illinois, on December 9-10, 2004 (see http://www.seat.ilstu.org/ for video and text of these proceedings). At this

meeting, representatives from the AT vendors, the private sector, not-for-profit organizations, federal government, and institutions of higher learning were presented with seven questions designed to provide a framework for direction in creating a national AT agenda. These included: (a) What do you see as the state of AT services nationally? (b) What do you see as the challenges for the development of AT services nationally?(c) What is your vision for AT services nationally? (d) What do you see as needed 'tomorrow' that is not available now? As needed within 5 years? (e) Who are the existing entities available nationally that could be more effectively integrated to make the power and promise of AT a reality? (f) How could existing entities be integrated into partnerships and/or coalitions to create more effective AT services nationally? (g) What are the critical outcomes that would make this possible?

Discussions were conducted around each of the seven questions. Discussions were led by a trained facilitator and used a variety of large- and small-group activities designed to maintain an engaged 'community' of participants. These discussions were either video- or audio-taped for later transcription and review. In addition, representatives from the SEAT Center (Wojcik and Peterson-Karlan) served as note-takers and 'summarizers.' Using their notes and observations, summaries of the themes and main supporting points which seemed to have been generated during the discussion of the first two questions were presented to the participants for review and refinement prior to the discussion of the last three questions. Through this process, important issues reflecting multiple perspectives of the leaders present were revealed that illuminated the status of AT service delivery systems nationally. Each of these questions is presented in the following sections with key

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Table 1
Themes of Visioning Activity

- Local development is driven by local need
- Uneven distribution of awareness level information and in-depth professional development across potential user constituencies
- Insufficient development and availability of knowledge of and means for determining AT efficacy and outcomes
- A funneling effect operates within service systems due to reliance on experts
- Funding priorities and cost misinformation prohibit informed AT assessment
- Cost concerns are driving upscaling that in turn, may be resulting in AT rejection or abandonment
- Lack of unified vision for AT across all disabilities, both low and high incidence disabilities
- Lack of best practice information for AT leaders and practitioners
- Need for an organizing framework for national AT service delivery
  - Sensitive to the current needs for student achievement and access to the curriculum
  - Demonstrating a linkage of special education strategies to general education content (for all students) and
  - Emphasizing collaboration across non-traditional partners

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findings summarized. Themes emerging from the discussions are presented in Table 1.

The State of AT Services

A key theme that emerged from the discussions is that 'local development is driven by local need' with regard to both delivery systems and populations served (see e.g., California Department of Education, 2004; Michigan Disability Rights Coalition, 2002; Reed, Fried, & Rhoades, 1995). Within local communities, where 'local' can mean a school district, a coalition of school districts, or the state as a whole, there is an array of successful 'local solutions' to the full range of service needs, that may include (a) pre-service education and professional development; (b) distribution networks; (c) product development an distribution; and (d) 'individual' research-based strategies (i.e., small scale studies focusing on specific issues/problems). However, these local solutions are either too inefficient to assist

large numbers of persons with disabilities nationally (Rose, 2001) or there is little incentive or leadership to integrate local solutions into a national level strategy. At best, solutions develop to the state level and may be known nationally (e.g., Wisconsin Assistive Technology Initiative) but are not systematically integrated or replicated on a national basis.

Discussants noted that both awareness level information and in-depth professional development is not evenly distributed across potential user constituencies around the country. For example, substantive numbers of professional development materials and vendor products have historically focused on individuals with low incidence disabilities (e.g., hearing impairments, visual disabilities, and physical disabilities), with fewer products and training materials addressing the needs of persons with mild disabilities (e.g., learning disabilities, behavior disorders). Ted Hasselbring, Principle Investigator for the

National Assistive Technology Research Institute (NATRI), noted that regular education teachers who are servicing students with disabilities "are really unfamiliar with AT, totally. They don't know what it is, they don't know how it's used, what the possibilities are."

As Cathy Bodine observed,

> if we are going to have systemic differences with change we have to define what success is with use of AT and…what it is that we nationally need to be teaching people and I don't think we've ever sat down…to the table and said so when we are all in agreement on what people need to learn as the baseline knowledge level.

Additionally, knowledge of and means for determining AT efficacy and outcomes are not sufficiently developed nor widely available resulting in education professionals not being prepared to use AT effectively in school settings (Ashton, 2004; Wojcik, Peterson-Karlan, Watts, & Parette, 2004). As noted by Ted Hasselbring,

> I think AT is really underutilized to this point. I think there are a number of reasons for that. I think consumers are not well versed, but I think educators are not well versed and I think that that is the biggest problem; we're finding that in our own data.

More specifically, participants noted that a 'funneling' effect operates within service systems due to reliance on experts (see e.g., Bowser & Reed, 2000; National Council on Disability, 2000). For example, AT experts at the national level funnel information in workshops and conference presentations to state leaders; state leaders funnel information to constituencies in communities; vendor experts funnel information to consumers of

their products; and AT experts in schools funnel information to teachers and families. Specifically, funneling occurs when the expertise is based upon a specific subset of AT tools or solutions for which the expert has had more in-depth training and not upon a wider range of tools or solutions for the given area of function (e.g., communication, writing supports, etc.). Expert funneling has the net effect of diminishing the knowledge base of large groups of individuals, such as practitioners, family members, and consumers, and reinforcing the continuing reliance of entities and individuals in the service system on experts. As Hasselbring noted in commenting on the role of vendors as experts, "they're the ones that are primary trainers of our educators right now, much more so than schools or even colleges of higher ed."

In commenting on the approaches that some vendors have taken regarding training, Caroline Van Howe of Intellitools, Inc., observed that,

> …we do a lot of training…directly to schools and also parents at public conferences, but also we have a number of independent trainers, so we haven't tried to train them all. We try to train as many people as possible to take their knowledge back into the community where the community might be able to do that. And what we are just about to change is our focus; we have been doing very much how to use our product within the environment. What we are doing much more now is why you should use it, what scenarios you should use it, what strategies you can have to implement it successfully on a long term sustainable basis.

Training individuals to return to their respective communities and provide AT

expertise on such a long-term and sustainable basis emphasizes the importance of leadership training. As Phil Parette, Director of the Special Education Assistive Technology Center, observed, "…there is a huge need for the training or professional development of leaders in the field of AT…we are not preparing people to go into school districts or whatever the service system is, and assume AT leadership roles."

Another theme that emerged concerned the impact of funding 'priorities' and cost 'misinformation' in prohibiting informed AT assessment which is typically a function of time commitment, and thus associated costs. Marcia Scherer, Director of the Institute for Matching Person and Technology, commented that,

> Nobody feels they have the time to commit to that more comprehensive [assessment] process…the lack of commitment to conducting a good, solid assessment of what supports and blend of supports would be most beneficial for that unique individual.

Lack of commitment to the AT assessment process was seen as being exacerbated by the lack of systematic efficacy and outcome information noted earlier, especially as it impacts justification of the cost relative to the outcomes predicted from the assessment. Caroline Van Howe, reporting on a survey of members of the Assistive Technology Industry Association noted that,

> one of the main concerns…was the lack of information about the outcomes or efficacy of the assistive technology products…It is very difficult to do a cost justification when you can't prove what the outcome is going to be, what the benefit is going to be…There isn't any national information database; it (the

information) is isolated, often anecdotal…we have to have the benefits clearly articulated…to put that cost/benefit process together.

It was also suggested that cost/benefit concerns are driving 'upscaling' (e.g., designing and distributing more complex AT through which one product attempts to meet needs of many individuals). The problem of upscaling was succinctly observed by Ruth Ziolkowski, President of Don Johnston, Inc.:

> …from a developer perspective there is a lot of competition, and now we are getting into your feature wars…and we are developing for a lot of the experts--for technology experts--who want more and more features, and I think that's the big problem we have right now is we have been an expert and innovator type of industry and now we need to move to more of the mainstream.

But upscaling may be resulting in AT rejection or abandonment by professionals due to its complexity. As noted by Cheryl Volkman of AbleNet, Inc.:

> I think the funding mentality is costing us as a nation too much because people will do an evaluation of a student and say that this is the product that you need, but knowing that they have to have only have so much money they will go to a more feature rich product so that it will meet the needs of many more students and then it becomes too complicated and the people don't know how to use it and the product is abandoned and never meet the needs of the individual (SEAT Center, 2004).

From a consumer perspective, Marcia Scherer observed that

> …technologies are part of the problems themselves. In order to meet the needs of as large a number of people as possible, maybe in the spirit of universal design or what have you, they are so overloaded with options that you do rapidly reach a point of cognitive overload…it becomes less useful. It's not assistive anymore.

Challenges for Development of AT Services Nationally

Of particular concern to discussants was the recognition that there is no unified vision for AT across all disabilities. It was acknowledged that current educational accountability legislation and requirements, such as the No Child Left Behind Act of 2001 and its emphasis on adequate yearly progress (AYP) may drive systemic change nationally. This potentially poses a threat, according to Dianne Ashby, Dean of the College of Education at Illinois State University, who observed, "The question (in the schools) is how do we get these kids not counted, not how do we see that their academic opportunities and so their achievement improves." This suggested the need for a cohesive business plan with a single goal that addresses development and planning. In addressing the need for such planning, Gil Barner, former Executive-in-Residence at the University of North Carolina-Chapel Hill, noted,

> It's all [the system] fragmented. Everyone is doing very well in some places, but no one is doing very well in all. And so it would seem that some sort of group…needs to sit down and start with some very basic things, which is as where are you, who are you, what do you want to do, where

are the strengths, how do we get all of this information…in a cohesive plan that then allows you to in effect advance with PR…and build an image to make this program appear valid to everyone.

Another major issue that emerged from conversations was the lack of best practice information for AT leaders and practitioners. This issue has implications for assisting with the development of regulatory language that addresses highly qualified personnel stated in the IDEA reauthorization. But the issue of highly qualified seems to pale in contrast to the immense challenges of preparing practitioners to have a minimum level of AT proficiency (see e.g., Wojcik, Peterson-Karlan, Watts, & Parette, 2004). Cheryl Volkman, of Ablenet, Inc., commented that,

> there are many, many special education teachers and AT specialists, but because the training is not very efficient in a lot if the colleges and universities, we continue to train all of the new people…and we never get over that baseline, and there is no one place where you can go to get the basics of communication and all of the things that they are doing in access to that curriculum; everybody is working on their own individual thing.

Participants also noted that entrepreneurial skill sets should be an important component of personnel preparation and service delivery approaches. Such skill sets would enhance organizational ability to develop and distribute products more efficiently. For example, Paul Dulle, Executive Director of Infinitec, commented on his organization's success in Illinois in creating school-based coalitions using a business model:

> …When we started the Infinitec program, it's fascinating, because the

only way, whenever you bring up money, everybody goes, "Not my money!" So we were able to basically identify two cases in which school districts were told they had to buy a piece of technology equipment--pretty expensive piece for a child--and the school district said 'No' and the parents got their lawyers, and we were able to document $180,000 dollar legal fees over a $7,000 device, and it was only when we brought this reality to these people that they said, "Hmm. So the alternative is that we all contribute just a little of money and we create our own loan library", and that's how it [the Infinitec AT Coalition model in Illinois, emphasis added] grew.

Participants also noted a need to 'connect' or share information across various AT knowledge bases, emphasizing a current negative "silo effect" across the various AT disciplines. Infromation "silos" result from the creation of multiple knowledge bases which emerge from varying perspectives (e.g., medical, rehabilitation, education, vendors) and which are frequently not easily accessible across disciplines resulting in a diminished ability to create a comprehensive knowledge base.

Vision for AT Services Nationally

Conversations conducted regarding a national vision for AT services initially focused on six components. The first component was an organizing framework, which would, as Dianne Ashby, Dean of the College of Education at Illinois State University, observed, "bring people together around the notion that we need a national system and what the system looks like." This national system would be sensitive to (a) current needs for student achievement and student access to the curriculum, and (b) a linkage between special education strategies and the general education content, and (c) how those two things would work together to benefit all children.

The need for multiple levels of collaboration across stakeholders was identified as a second component of a national system, including collaborations across (a) State Departments of Education who are driving the state curricula and planning for adequate yearly progress (AYP) in the local schools, (b) vendors; (c) families; (d) children; (e) industries; (f) states; and (d) governmental groups.

A third component identified was the need for developing a more cogent understanding of the nature and effectiveness of existing AT systems and constituencies/organizations. To most effectively accomplish this, participants agreed that there is pressing need to identify both the roles and skill sets of assistive technology specialists nationally. Such an examination might entail convening these specialists to learn from them, with particular emphasis on how collaborations could most efficiently be expedited.

Education was identified as a fourth component of an envisioned national system. Once an understanding was gained from AT specialists regarding what they do well, particularly with respect to education and providing supports to service delivery systems, more efficacious educational approaches nationally could be developed. These approaches would include education (a) for all education practitioners, (b) parents, (c) across disciplines, and (d) of our policy makers and legislators.

A fifth component of a national system would include the creation of national technology standards—both for AT specialists and for teachers. As an example of this approach, Cathy Bodine, Assistive Technology Advisor for the Coleman Institute for Cognitive Disabilities, noted that:

We went through all the national organizations--ASHA, AOTA--pick one and everybody's got their white paper on AT competencies. So we pulled all those out and created a list of 50 AT competencies. And we've divided into core and advanced competencies and that's what we are developing all of our curriculum around because it's cross-discipline and it's cross approach.

A sixth component of a national system would be increased awareness of assistive technology as a part of life-long system of support for all citizens. Increasing awareness might be facilitated by presenting to the public 'reality shows' in which environments and AT strategies could be showcased where learning was supported.

What is Needed 'Tomorrow' and In the Future

Discussants noted that there is a need to develop a best practices knowledge base that identifies competencies across disciplines and needed assessment tools. Of particular importance was the need to create equal access to knowledge and tools in 5 years.

As Jim Thompson, Chair of the Department of Special Education at Illinois State University, commented, "If we could come to consensus about our basic competencies across disciplines in terms of AT, that will clarify who is an expert and who is a beginner and at this point there isn't that type of consensus." Further, discussants noted the importance of assessment tools, acknowledging that the field has tools that lead people on the right direction, though it would be desirable to have assessment tools that were more prescriptive and provide insightful information in terms of what to do with an individual child. There is also a need to identify measures of meaningful outcomes

that go beyond just the numbers of students accessing AT. The field needs to be able to make need statements or to make knowledge claims regarding student success that basically attest that particular students received appropriate student AT services and are using appropriate AT as a result.

Vendors especially would benefit from the dissemination of knowledge, as noted by Caroline Van Howe of Intellitools, Inc.:

…we spend lot of money on canvassing our customers, getting their business needs, to direct a new form of product level process…we want to have business cases around the AT world, a business case that the vendor will appreciate to a certain extent in a collective way, or coordinated way of getting where do we all want to be five years down the line, sharing that information so that vendors could be similarly informed.

Cheryl Volkman of Ablenet, Inc., echoed the need for sharing information across stakeholders by stating that it was important for vendors to understand (a) how AT specialists are being held accountable in schools, (b) who is measuring that and how they getting a feedback that they are doing a good job ; and (c) how well advertised is the information. As she noted,

From a vendor perspective if we know how, what they are being held accountable for and how it is being translated into student success , the level of support that they give us can provide that group of people such an incredible job. Then we also understand why 15 states have done it and why aren't other states doing it and how does that actually become a common system and how do more

people have input into that support of that system.

Participants observed that equal access could be facilitated in a number of ways, including the (a) removal of economic 'disincentives, (b) identification of non-negotiable learner needs, and (c) decreasing the uniqueness of AT experts. As Jim Thompson noted in summarizing participant conversations, there are "…a lot of pockets of very good things happening but it's not equal across districts, across states, across income levels, across a lot of variables, and so to have an infrastructure in place which assures more equal access to equipment, to training, to expertise would be desirable."

The recognition that AT is still a cottage industry, though mentioned numerous times by participants throughout the proceedings, was succinctly highlighted by Tom Heimsoth, former CEO/Chairman of Resource Information Management Systems, Inc., who noted:

> …it is very much a cottage industry and everybody is working very hard to try to make sense of it and you go out and try to, you all are going out and trying to educate the educators and how they use these devices and it's just not enough --not enough traction in terms of the economics and a lot of these savings are not being transferred to the field.

In commenting on the importance of partnerships, Bob Aaron, Director of Marketing and communications at Illinois State University, observed that:

> The simple fact of the matter is that when you are talking about building a coalition--even if you have a common broad interest--there are so many sub-interests and turf issues…all of that

has to be mitigated if we are going to look at a larger issue here and it's not just dealing in the governmental spirit, but building partnerships and collaborations with private industry, telling the story to private industry…

It was also suggested that efforts should be made to utilize a process of needs forecast that leads to product forecast.

Existing Entities That Could Be More Effectively Integrated

Numerous professional organizations and constituencies were identified that might be targeted for partnerships in creating a national AT agenda, including, but not limited to the following: (a) National Association of State Directors of Special Education (NASDSE); (b) National Governors Association (NGA); (c) American Association of School Administrators (AASA); (d) Council of Chief State School Officers (CCSSO); (e) National Association of Secondary School Principals (NASSP); (f) National Association of Elementary School Principals (NAESP); (g) Education Commission of the States; (h) Coleman Institute on Cognitive Disabilities; (i) Institute for Matching Person and Technology; (j) National Assistive Technology Research Institute (NATRI); (k) Consortium on Assistive Technology Outcomes Research (CATOR); (l) Assistive Technology Outcomes Measurement System (ATOMS); (m) Infinitec; (n) Assistive Technology Industry Association (ATIA); (o) Assistive Technology Act Projects (ATAP); (p) Quality Indicators for Assistive Technology (QIAT); (q) United Cerebral Palsy; (r) Easter Seals, and other disability organizations; (s) American Association for Retired Persons (AARP); (t) Council for Exceptional Children (CEC); (u) Technology and Media Division (TAM) of CEC; (v) Department of Education; (w) general education teacher groups, including union, grade level groups, and trade

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associations; (x) university teacher preparation programs, including both general education and special education; and (y) the general public, including foundations and business sector.

Partnerships and/or Coalitions to Create More Effective AT services Nationally

Discussants observed that there is a need for integration of partnerships nationally to create more effective AT services. Specific strategies for facilitating such partnerships were also articulated. It was noted that determiners of outcomes should be identified, and outcomes incorporated into all partnerships and/or coalitions. A beginning point would be to start with schools who have not yet met adequate yearly progress (AYP, as described in the No Child Left Behind Act of 2001) and determine how technology might promote success. It was also observed that there was a need to quickly develop a national plan, or agenda, using the expertise and commitment of the discussants as a catalyst.

Information, training, access to AT, and outcomes research should be initial focii allowing development of a paradigm that facilitates creation of partnerships. It was also noted that those involved in developing a national plan, or agenda, must include representatives of the entire education curricula (i.e., all students, all levels). The importance of educating parents to empower them to request and make decisions about AT was noted as a change agent. To ensure maximal change, it was noted that crossing systems is important (e.g., linking school and rehabilitative services to ensure that AT travels across multiple systems, such as school to vocational rehabilitation, and vocational rehabilitation to work settings).

Outcomes and Benefits

Discussants noted the importance of identification and national distribution of a clear set of outcomes-based strategies and approaches for teaching people how to use AT. Suggestions included use of AT success stories (e.g., academic outcomes) and case studies reflecting consequences of not using AT. Discussants noted that another outcome desired would be for education and other professional teams to be able to access a point (network) to obtain needed resources for considering and implementing AT. Another outcome might be for the Disney Teacher of the Year to be an education professional who has used AT successfully with students to enhance student achievement. The ongoing involvement of ATIA in planning processes was also recommended.

Given that Illinois State University currently trains approximately 5,000 future education professionals, it was noted that the Special Education Assistive Technology (SEAT) Center was in a unique position to assume a leadership role in collaborating with other national groups to develop innovative training approaches for national dissemination. As observed by Ted Hasselbring,

> You look at the number of students that you educate and the number of teachers that you turn out and the opportunity you have to put lot of this in motion very, very quickly… So a lot the stuff we were talking about today could be put in motion at this university right here, quickly and have an impact and really become a national model.

Discussants observed that opportunities to create a national agenda existed, and that a 'turning point' in the field of AT was potentially existent if a plan was initiated quickly that (a) focuses on both short- and

long-term wins, and (b) emphasized immediate attention being directed toward short-term wins with student achievement as a context for the group effort. The importance of using an entrepreneurial approach as a backdrop for all planning was emphasized in order to synergize multiple partnerships.

Specific 'next steps' toward achieving these outcomes were discussed by participants as both a benefit of the meeting, and expected outcomes. To ensure momentum for the planning effort, it was recommended that financial resources to cover agenda development expenses and needed staffing-- both full time and part time—be secured. The importance of convening a meeting in 2005 was also noted as a critical outcome. This meeting would be composed of selected individuals charged with the responsibility to create a working business and strategic plan that reflects (a) some innovation in channel and product development, measurement of need to reflect distribution priorities, and other guidelines and how to best incorporate the other players in a comprehensive AT market place; and (b) immediate innovative objectives that address student achievement initiatives (short-term wins), non-traditional partners, and include input pertaining to the definition of highly qualified personnel in the Individuals with Disabilities Education Act of 2004. Once the initial plan is developed, it was recommended that it be submitted for group review, refinement, and input from broad constituencies. This would then be followed by plan implementation with focus on short-term wins, and emphasis on expansion of partnerships with wide range of constituencies.

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