The Evolving Landscape of Assistive Technology in K-12 Settings

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Abstract

This paper focuses on the evolving landscape of assistive technology (AT) in school-based settings. It explores the change forces affecting AT, for sole providers of AT services and for AT teams. After 30 years of assistive technology service delivery, it is time for AT providers to re-examine whom we serve and how we serve, now and in the future.

Keywords: assistive technology services, building capacity, change forces, AT teams, AT leaders, AT service provider, K-12 education, professional learning, documentation and accountability, outreach.

Introduction

For the past 30 years, federal laws such as the 1988 Tech Act and the Individuals with Disabilities Education Act (1990) have guided us in the delivery of Assistive Technology (AT) devices and services. AT was first addressed by Congress in the 1998 Assistive Technology Act. The act did not specifically address AT in education, but was intended to apply to persons of all ages in the general population who have disabilities. AT became more specifically incorporated in law as part of special education IDEA amendments that linked it to AT consideration within the IEP process.

Each of these laws has implications for the activities of AT Teams. For the purposes of this paper, the terms "AT specialist" and "AT service provider" are used interchangeably and refer to those individuals who have a leadership role in designing services that support the use of AT in classrooms. As identified in this article, "AT teams" may be a loosely formed group of AT specialists or a formal multidisciplinary team assigned to manage a range of AT services. The term "school teams" refers to staff interacting with students throughout the school day.

A variety of professional development organizations and individual AT specialists have influenced the field of AT as it developed and matured. The Education Tech Points framework (Bowser & Reed, 2012) was first published in 1995 and provided a structure for AT services in educational settings. The SETT (Student-Environment-Tasks-Tools) framework for addressing AT concerns was presented at the Closing the Gap (CTG) conference in 1995 (Zabala, 1995). The Wisconsin Assistive Technology Initiative (Reed, 1994) defined essential elements of a comprehensive AT assessment in a way that was accessible to school providers and educational teams. CTG and other major professional development organizations, such as the Assistive Technology Industry Association (ATIA), the California State University, Northridge (CSUN) Assistive Technology Conference, and the Innovations in Special Education Technology (ISET) division of the Council for Exceptional Children, have, for many decades, sponsored professional development opportunities on a wide variety of AT topics. State-sponsored AT projects in many states provide technical assistance, professional development, referral information and resources to local and regional AT providers in education settings. The Quality Indicators of Assistive Technology (QIAT) consortium has published eight sets of "quality indicators" to guide excellence in AT service delivery (The QIAT Leadership Team, 2015). These and many others have served to guide the development and provision of AT services to date.

Over the past three decades, a variety of shifts have occurred in education, affecting the provision of AT services. Notable among these shifts are a trend toward the education of students with disabilities in inclusive settings; the enhancement of educational technology by the addition of accessibility features in most technology platforms; and a move to more individualized student instruction and support. Michels (2017) identified three specific educational initiatives that are having a significant effect on AT services: 1) Differentiated Instruction (DI)/Personalized Learning, 2) Response to Intervention (RtI)/Multi-Tiered Systems of Support (MTSS), and 3) Universal Design for Learning (UDL). While each of these frameworks has its own descriptive language, the focus on learner variability and multiple means of

instruction tied to student needs is a common denominator. The role of general and special educators is being redefined within these initiatives, and so, too, is the relationship with AT providers. Special education is less often provided in a self-contained classroom as services are increasingly delivered in inclusive settings. Moreover, the focus within education is moving away from any notion of the average learner and toward personalizing instruction for a wide range of learners.

Research that sheds light on achievement and engagement gaps provides the impetus behind some of these educational initiatives. This includes research analyzing the effects of poverty on learning (American Psychological Association, 2018; American Psychological Association, Presidential Task Force on Educational Disparities, 2012; Kena et al., 2015), evaluation of the stagnant achievement gap for students with English as a second language (Musu-Gillette et al., 2016; US DOE, Office of English Language Acquisition, January 2016), and research on the gradual decline of student engagement during the middle and high school years (Calderon & Yu, June 1, 2017). In light of this research and the shift to focusing on individualizing instruction for all learners, the question arises: Who are AT providers serving and who should have primary responsibility for AT support in K-12 education?

Change Forces Impacting AT Services

Michels's (2017) research also describes three current change forces impacting the ways that AT services are provided. They include changes in the student population, the ubiquitous and more universal nature of educational technology, and the blurring of the lines between AT and instructional technology (IT). Quinn et al. (2009) demonstrated that AT services were disproportionally provided to low-incidence populations. Conversations with more than 600 AT providers as part of a course on the changing role of AT teams suggests that, ten years later, this is still typical. A survey of over 500 alumni of the Changing Roles of AT Teams courses (DeCoste & Bowser, 2019) also indicates that district AT providers rarely consider equity of AT services across disability, racial, and socioeconomic status. If equity is defined as dealing fairly and equally for all concerned, then it is important for districts to ensure that access to AT is delivered proportionally to students with low- and high-incidence disabilities. Bouck (2016) offers a secondary analysis of the National Longitudinal Transition Study-2 focused on understanding issues of AT for secondary (i.e., high school) students with disabilities. Her analysis suggests low rates of AT access and/or use in general for secondary students with disabilities, but higher rates of AT for secondary students with more low-incidence disabilities than students with more high-incidence disabilities. An equally important question is whether AT services are proportional across racial and socioeconomic lines, or if, instead, the referral process results in more and better services for children with strong teacher and parent advocates.

The second change force impacting AT services is the evolution of AT devices themselves. Many features (e.g., magnification, text-to speech, word prediction, speech-to-text) required by learners with disabilities are currently already embedded in software included on commonly available laptops and portable tablets. Such options built into mainstream devices make assistive technology more available to a wider range of students and teachers while they also decrease the stigma attached to specialized, stand-alone AT devices and accessibility features.

Michels's (2017) third factor, the more universal nature of educational technology, blurs the lines between AT and IT. For example, the UDL framework uses proactive instructional design and is a logical first step for incorporating technology into classroom instruction. From the outset, instruction is designed to offer multiple means of engagement, choices on how information is presented, and multiple ways for learners to represent what they know. Educators work with students to guide their choices to meet individual needs. Because of the flexibility they offer, instructional technology and assistive technology are an integral part of the UDL framework for all learners. MTSS, RTI, and Differentiated Instruction (DI) guide the decisions that teachers use in the selection of learning opportunities once student needs are identified. UDL, MTSS, RTI, and DI all seek to personalize learning for students needing additional supports. The tools that are selected (e.g., screen enlargement, text-to-speech, speech-to-text, word prediction) are often readily available, and may not be considered AT tools. Classroom teachers who are providing digital instruction, particularly those implementing UDL and those in one-to-one device classrooms, may find it hard to understand the distinction when accessibility tools are used by choice by a wide range of learners, yet must be documented as AT for specific learners with disabilities.

The educational initiatives and the change forces described above create a need to examine the way we deliver AT services. The current population of students who can benefit from AT is often too large for AT teams to address in the typical one-student-at-a-time manner. Expert models of service delivery are often unsustainable (Reed, 2004; Edyburn, 2000). The focus on personalizing instruction for all learners and the availability of more universal technology that benefits students in the margins due to lack of engagement or to learning issues mean there is a broader audience of students and teachers to serve. AT teams need to adapt to this evolving educational landscape, or risk being overwhelmed by individual demands for service.

Michels (2017) studied AT teams that are part of educational cooperatives. She hypothesized that AT teams are in a state of change and that simple adaptation of traditional designs of AT services may be insufficient. Those teams unable to evolve run the risk of dissolution. Wright (2000) examined the role of Educational Service Agencies (ESAs) and found that that ESAs that survived had evolved from serving students with disabilities in isolated settings to serving students with disabilities in inclusive settings, and then to serving all students. Agencies that use per-student or fee-for-service funding models have generally had to redesign their models as their costs have been too high for districts to justify using contracted services.

In the beginning, the expert model of AT service delivery was considered the optimal model for AT services. It is based on the assumption that agencies will have sufficient AT resources and providers to offer equitable services across all types of disabilities. In the absence of sufficient resources, a typical recourse for AT teams is to limit AT services to the learners most impacted by disabilities, typically students with complicated, low-incidence disabilities. Another recourse is for AT services to default to "concierge" type services. However, such services respond only to individual referrals in ways that do not ensure equity and are not in keeping with current educational paradigms to provide support to a broad range of students who can benefit from AT. It is our contention that AT service design models must move

beyond the one-size-fits-all model of service delivery, where the process (e.g., referral, formal or informal assessment, trial period, implementation plan, evaluation of effectiveness) is the same for all students regardless of the learning environment and the technology knowledge base of school teams. It is our view that it is essential for AT providers to build the capacity of school teams to conduct appropriate AT assessments and help their students utilize tools while still having access to the AT supports, guidance, coaching, and mentoring that are needed to support the broadest range of educators and learners.

Outcomes and Benefits

In a brief written by the Center to Improve Project Performance (CIPP) operated by Westat for the U.S. Department of Education, Office of Special Education Programs (OSEP), capacity building is defined as follows:

> *"Capacity building is an intervention that strengthens an organization's ability to fulfill its mission by promoting sound management, strong governance, and persistent rededication to achieving results." (Lammert et al., 2015, p.1)*

Building AT capacity in K-12 settings is needed to fulfill the mission of districts to support all students in becoming life-long learners. In order to build the capacity to provide AT, AT teams and the agencies they serve must share a vision of the outcomes of AT use. A sample school district vision for AT services provided to one student at a time might look like this: *Students with disabilities use the AT devices and services they need and show increased benefit from FAPE because of AT.* Unfortunately, the experience of a wide variety of AT teams is that such a vision is not sustainable within the context of sound management and governance. An alternative vision of AT capacity building employs a UDL approach with an emphasis on equity, management, governance, and rededication to achieving results that is focused on the actions of teachers: *"As teachers organize their curriculum and instruction to support diverse groups of students, individualized technology accommodations are embedded and delivered in the context in which students work together."* (Woodward & Cuban, 2000, p.3)

In this paper, *building AT capacity* refers to this more sustainable way to deliver AT services: meeting the needs of a changing population of students at a time when we have the ability to personalize instruction for a wide range of learners using more readily accessible technology. It refers to building administrative support for developing new ways of delivering and documenting AT. And it refers to multiple ways of providing professional development, building on-demand resources, and reaching out to other stakeholders within the educational organization. Capacity building requires AT providers and classroom educators to let go of a hierarchical approach to AT service delivery and find new ways to build shared ownership of AT. A capacity building vision expects that teachers will increasingly develop knowledge and independence in providing instruction that includes AT used by their students who need it.

Agency leaders play an essential role in the promotion, sound management, and governance of AT teams and AT service providers who are designated to support the needs of struggling students in general education classrooms. Administrators have a responsibility to ensure suitable resources and an

appropriate knowledge base for all AT providers. They also ensure a smooth transition and the maintenance of AT expertise when personnel shifts occur. Overall, AT providers and supervisors must be dedicated to the importance of AT and share a vision for its role in educational programs. Leadership's role in agency self-assessment can ensure that there is also a common vision for capacity building.

Bowser and Reed (2018) discuss essential aspects of AT leadership, all of which must be addressed if AT supports are to be useful and readily available. School administrators are the leaders of the vision for the programs they serve, whether it is a specific program, a building, or an entire agency. In addition to their overall leadership responsibilities, school administrators engage in three types of activities. They: (a) manage the programs for which they have responsibility; (b) supervise the staff employed in these programs; and (c) lead program development and improvement efforts. Providing effective AT services requires a school administrator to address assistive technology from each of these administrative perspectives. As managers, school administrators sign purchase orders for new equipment and ensure consistent and equitable services. As supervisors, school administrators ensure that the agency has qualified staff members who are knowledgeable about AT and the technology needs of students with disabilities. As leaders in program development, school administrators include AT in long-term planning efforts. A move to a differentiated and capacity building approach to AT services requires understanding and collaboration on the part of school administrators and other AT leaders.

A capacity-building approach does not negate the importance or need for AT experts. Classroom teachers often have access to AT tools and accessibility features but know little about them. Some also have students whose need for AT goes beyond what is universally available. While school teams will likely be able to assess common reading and writing issues, they are unlikely to have the skill set to analyze less frequently seen AT needs such as physical access to technology, Braille, or augmentative communication. AT service design should not be an either/or choice between one-student-at-a-time and capacity building. AT teams need to find ways to differentiate services that they provide as experts and consultants, but also work to collaborate and coach school teams to build independence in educators within the school environment. The most important element for AT teams is to have a clearly defined mission that matches the identified needs of students and staff within the educational organization. Knowing who is served within the district and analyzing the degree to which equitable services are provided across the organization are critical to re-envisioning strategies for the delivery of AT.

Expectations for AT Teams

AT tools are no longer the sole domain of AT experts, as there is broad-based exposure to AT features, like word prediction on mobile phones, and everyday speech recognition built into productivity software and operating systems. Many accessibility (AT) features are now incorporated into mainstream technology. There are solutions such as Google Speak and text-to-speech features in online curricula. There are many free apps to check grammar and take notes. There is less novelty around AT since accessibility features are incorporated into everyday devices. There are video tutorials on vendor websites and YouTube to learn how to use these everyday tools. Given that so much information is readily available, what should be the expectations for today's AT teams? Michels (2017) conducted

survey research to determine current perceptions. She found that educators expect the following from AT providers:

1. A broad technology expertise across AT and IT.
2. A broad role in ongoing support (e.g., coaching, job-embedded training, capacity building, curriculum support).
3. AT providers as technology thought leaders.

Broader Technology Expertise Across AT and IT

While it is critical for AT providers to maintain their knowledge base in assistive technology, educators also expect them to have breadth and depth of instructional technology knowledge. The majority of struggling learners are in general education classrooms where instructional technology is used routinely. According to the National Educational Statistic Center (2017), 63% of students with disabilities are educated in general education classrooms more than 80% of the day. Another 18% are in general education classrooms more than 40% of the day.

Given the rate of inclusion in general education classrooms, teachers expect that AT providers will understand how AT and IT intersect. Teachers need AT providers to be able to address questions such as: How can students with disabilities use online multimedia posters that combine images, graphics, audio, video, and text to convey what they know? How would augmented reality tools support students with moderate to severe disabilities? What supplementary tools are needed for students with disabilities to research topics and write informational text? How do text-to-speech tools and note-taking tools enhance close reading? A broader and deeper knowledge of instructional technology is as important as knowledge of AT for students with disabilities in general education classrooms.

Broader Roles for Providing On-going Support

Just as they are needed for students, multiple tiers of support are needed to transfer skill sets to classroom staff. For example, if a school team that requests AT support for a student is unfamiliar with the SETT framework, the AT service provider may want to model the agency's SETT process with the team and family. When a new student is referred from the same school team, the AT provider could encourage a staff person to facilitate the meeting, in collaboration with the AT service provider. Subsequently, the AT service provider would coach the school team, reassuring team members that they can conduct the SETT meeting on their own and then confer afterwards. This process of building capacity for AT consideration should be flexible, offering ongoing support as needed, but can send a clear message that the role of the AT service provider is to help the school team develop knowledge and confidence. If the AT consideration process always points back to an AT provider as the starting point, it establishes a practice barrier to building capacity. Capacity building is not accomplished overnight or merely by changing the rules. It is a gradual process of scaffolding information and coaching school teams.

Assessment can also be a collaborative process. Classroom staff are most familiar with student abilities

and should share in the assessment process. For example, the DeCoste Writing Protocol (DeCoste, 2014) uses a 4-part process to identify writing deficits. The school occupational therapist and teacher can collaborate with the AT service provider to administer portions of the protocol. UPAR (DeCoste & Wilson, 2012) is an online tool from Don Johnston, Inc. that compares reading comprehension using text-to-speech and pre-recorded audio recordings against an independent reading baseline. It was designed to be easily administered by school staff to a group of students identified as having reading delays. Another example of how collaboration can take place is in the administration of the Communication Matrix Assessment (Rowland & Fried-Oken, 2010) or the collection of data on core vocabulary for Augmentative and Alternative Communication (AAC) users. Coaching school level teams to take on more of the assessment builds ownership at the local level for target students and for others served by the school team.

AT support does not have to be a one-size-fits-all, linear process. Experienced school teams may conduct the SETT process on their own, but confer with AT specialists to discuss appropriate tools. AT service providers can use video conferencing, send links to resources via email, or direct school staff to resources on the AT website. They can also help school teams set up trial periods or develop implementation plans documenting effective tools and strategies. AT team support should be flexible and offer multiple means of support, both direct and indirect. Differentiated AT support is an essential component when building capacity within an agency. AT service providers have a responsibility to examine each request for support with an eye to helping build the skills of classroom staff. More students benefit when this occurs.

Table 1: Elements of Differentiated AT Support to Build Capacity

	Consultation	Collaboration	Coaching
Goal	To inform	To work together	To transform
Focus	On AT content	On AT partnership	On transfer of AT skill sets
Style	Telling	Discussing	Inquiry
Accountability	AT specialist	Designated school staff	Classroom team
Support Role	Expert	Colleague	Mediator or mentor

(adapted from Bowser and Reed (2012))

Professional development should also be viewed as a range of support options. Table 1 illustrates the ways that differentiated strategies for support can be used to enhance the independence of educators' use of AT in the classroom. Face-to-face (f2f), one-on-one support to teachers should be used appropriately, but sparingly. Whenever possible, direct consultation should be provided to multiple school staff. Agency capacity is built by encouraging independence among classroom educators who can then apply their AT skills to student needs without direct assistance from AT team members. AT services can also be delivered through video conferencing. It is an effective, time-efficient way to provide support on specific AT topics. Workshops on targeted topics can be f2f or presented via a live webinar. Webinars can be recorded and posted on the AT team's website as a way to build on-demand resources, along with links to resources on AT topics. Screen capture software can be used to create short videos on frequently requested topics. Professional learning communities can use synchronous and asynchronous

webinars to dive deeper into complex topics (e.g., AAC, visual impairment, behavioral supports). Because release time, funding, traffic, and after-school activities often prevent staff from attending face-to-face workshops, asynchronous resources are critical.

Not only should professional development topics be available in multiple formats to ensure just-in-time support, but they should be differentiated to ensure that the format and content of professional learning opportunities are appropriate for the various audiences they are designed to reach. For any comprehensive professional development effort, there are three primary audience groups: classroom educators who serve students on a daily basis, program level staff who provide consultation, collaboration, and coaching to classroom staff, and administrators at the district level who will supervise and assess the effectiveness of the program. When AT service providers develop professional learning opportunities that can meet the needs of each of these groups, true agency-wide capacity building is more likely to occur.

AT Service Providers as Technology Thought Leaders

Some individuals are leaders because of the assigned administrative position that they fill (e.g., school principal, special education director). Other individuals may become leaders in changing AT services because of their knowledge of AT devices and services or the way others in a group respond to them. Northouse (2016) labels these two types of leaders as "assigned leaders" and "emergent leaders." In their survey of established AT teams, DeCoste, Reed, and Kaplan (2005) found that only 20% of the teams surveyed stated that assigned leaders (i.e., administrators) initiated their AT team development. More commonly, AT team activities were developed as enthusiastic direct service providers saw a need for AT coordination. These individuals and the vision they bring are "thought leaders."

Despite the enthusiastic efforts of thought leaders, without direct administrative support, AT improvement efforts are likely to be less effective and more difficult to sustain. In an international synthesis of research about successful school leadership, Leithwood, Harris, & Hopkins (2008) noted that almost all successful leaders draw on the same set of basic leadership practices. They organized these into four categories: (1) building vision and setting directions; (2) managing the program; (3) understanding and developing individuals; and (4) redesigning the organization. In changing the nature or style of AT service provision, attention to each of these areas by assigned administrators and AT leaders can be extremely effective in leading change and building agency capacity.

Documentation and Accountability

One way that AT service providers can serve as thought leaders is to document and report on the effectiveness of AT tools and AT services. Periodic meetings with supervisors foster leadership's commitment to AT. End-of-year reports that include relevant data reinforce the professionalism of the AT team—even if it is a team of one! While there is increasing research about the effectiveness of a wide range of AT devices (See NATE Network website (www.natenetwork.org) for a list of research about AT), the field of AT has been notoriously negligent when it comes to documenting the effectiveness of AT services (Ranada & Lindstrom, 2019). Here are examples of how information may be included in the daily

operations of AT teams:

Request for support. Traditionally, AT services have followed a medical model. Referrals for AT services often use a questionnaire that focuses on a detailed description of the student. This can sometimes be a case of information overreach and does not provide clarity about what the school team really needs to consider for a student in the context of the classroom. Asking questions about the needs of the team providing direct service to the student can yield more useful information. The HIAT (High Incidence Assistive Technology) team of Montgomery County Public Schools, Maryland, as part of an initiative to build capacity beginning in 2003, shifted from a medical referral to a survey form that requests a minimum of information on the student and focuses more on the needs of the school team. For an example of the type of questions included in the HIAT Request for Support, visit https://www.natenetwork.org/knowledge-base/differentiating-at-services-resouces/. While a Request for Support survey begins by requesting essential information such as the student identification number, school contact information, grade, etc., the survey focuses more on questions regarding the school team's comfort level with AT consideration using a Likert scale (not comfortable, somewhat comfortable, comfortable, very comfortable). More detailed information on the student is typically available in the district's online student database. The following are a few examples of questions on the form:

- How would you rate your team's ability to identify and prioritize critical barriers to learning for a specific student?
- How would you rate your team's ability to do the following tasks related to the AT trial process? (e.g., identify the barrier to learning, plan and implement a trial period)
- What is your knowledge of the following tools? (Tools available within the agency are listed)

This request for support communicates the important role of the school team in collaboration with the AT specialist. The survey taps into the school team's ability to consider AT and its knowledge of AT tools available in the district. It generates important data on the reasons for AT service requests and tool usage, which adds valuable context to an end-of-year report. Most importantly, it helps the AT team identify the appropriate starting point for AT support.

Tracking AT services. One way to measure AT services is to identify the nature of the services provided across the school year (e.g., support in using the SETT Framework, trial period support, AT tools consultation, assessment, AT training, equipment support, implementation plan support). An alternative to this is to track the intensity of AT services by measuring the number of hours of service provided (e.g., 1-5 hours, 6-10 hours, etc.). This data can be entered into the agency's student spreadsheet or database and is readily available for an end-of-year report.

Trial period data. The data collection described above is still only surface level information. Collecting data on the effectiveness of AT strategies and AT Team support is a more powerful reflection of the value of AT services. Unfortunately, the collection of AT usage data is typically hard to obtain, and collecting data that clearly isolates the effectiveness of AT on student performance is even harder. At a minimum,

AT teams should collect the results of AT trials that typically involve four to six weeks of AT use. When AT teams provide trial period support, there should be an upfront, communicated expectation that a description of effectiveness must be sent back to the AT team. Periodic email reminders can reinforce this agreement. Trial period feedback leads to data on the outcomes of AT tools and strategies. A simple rubric can be applied to the description of the trial period results: a) the student is gaining skills in the use of a new tool or strategy; b) there was no improvement in student performance; or c) the student did not demonstrate a need for the targeted AT. This information can be added to the student database or spreadsheet.

AT services exit survey. Information on the effectiveness of AT tools and AT team support can be obtained through the use of a short, end-of-year survey. The survey can be sent to the contact person associated with each request for AT support. One survey question should address perceptions about student outcomes; a second question should address perceptions on staff outcomes. Staff outcomes data is critical and reflects capacity building. The third question should ask what more the AT team could have done to support the implementation of AT devices and services in the classroom. To keep the survey brief, logic branching can be used to expand responses. The exit survey form, if provided in a digital format, can automatically generate charts that can be included in an end-of-year report for questions one and two. For an example of the Exit Survey Form in an electronic format, visit https://www.natenetwork.org/knowledge-base/ideas-on-documentation-and-accountability-in-assistive-technology/.

End-of-Year report. The previous four examples of data collection can be built into ongoing, routine AT team procedures. This, in turn, can be included in an end-of-year report with very little expenditure of time. This report not only documents the work of AT service providers, but also serves as a history of the work of the team. AT teams, no matter how small, must demonstrate accountability. In addition to outcome data, this report can include information on professional development, resource and website development, and outreach efforts. It should also include goals and objectives for the following year and a review of current goals and objectives. The end-of-year report serves as a planning tool and an accountability report. It provides a process for using data to help identify areas for improvement. For an example of the End-of-Year Contents, which provides a list of what can be included in an end-of-year report, visit https://www.natenetwork.org/knowledge-base/documentation-and-accountability-resources.

Outreach to Stakeholders

AT service providers can also serve as thought leaders by building a network of AT support through outreach to other district stakeholders. Outreach involves seeing your team in the context of a larger system. It involves analyzing your role to problem solve larger systems issues. Outreach efforts attempt to build long term, mutually beneficial relationships with other departments and agencies that can address AT issues. Outreach often requires that AT teams move out of their comfort zone, and speak the same language as other educators. It is about not waiting to be asked; it is proactive rather than reactive. For example, periodic meetings with IT can yield discussions about tools that are needed to support a wide range of learners, as well as discussions about future technology tools and their accessibility features.

Reaching out to curriculum development staff can lay the groundwork to include more AT supports in the online curriculum. Accessibility supports might include digital classroom readings for use with text-to-speech tools; providing choices for how students can represent what they know, or developing a section where digital materials adapted for students with moderate disabilities can be shared.

Outreach to media specialists, individuals who traditionally operate school library and media programs, can result in everyday benefits. Media specialists are often keystones within a school. They are routinely tasked to evaluate and select educational materials, including instructional web-based subscriptions, and they often provide instruction on these tools. Many of these subscriptions have built-in accessibility tools. For example, some online encyclopedias have a variety of built-in supports (e.g. text-to-speech, dictionary tools, informational videos). Ensuring that media specialists are aware of these tools supports a wide range of learners within a school.

AT specialists are part of a larger system. It is ineffective to chase systemic problems one school at a time. Outreach is key to solving systemic issues. One way to develop an outreach plan is to use a graphic organizer or mind-mapping software to brainstorm all the issues affecting the implementation of AT within a district, and then link these issues to the stakeholders who can help solve systemic concerns. Working with supervisors to discuss stakeholder issues and make decisions on the best way to network should be an ongoing conversation. Networking helps to broaden AT providers' expertise. They learn about new initiatives and absorb the language in which to embed AT topics. They better understand their role in the context of student support. They develop relationships that can yield long-term benefits as staff move up to higher level positions within the organization. Outreach helps to position AT providers as thought leaders for students in the margins, while advocating for all students throughout the agency.

AT Team Toolbox

To remain a vital service and build AT capacity, today's AT specialists need two tool bags: one that includes AT and IT tools to support students, and another that helps teams increase the effectiveness and efficiency of AT services by building the skills and comfort level of classroom staff. There are many online tools available to make documentation easier, to market and deliver professional development, and to share AT resources, as well as to share AT success stories:

- File management tools allow teams to share documents.
- Spreadsheets allow teams to keep data on caseload and equipment use.
- Project and task management tools help teams communicate about team projects.
- Scheduling tools help teams set up meetings more efficiently.
- Marketing and social media tools provide a variety of ways to announce new products and professional learning.
- Survey forms allow teams to gather data.
- Professional development tools allow teams to use distance learning tools to reach a wider audience.

- E-learning tools provide a platform for mini courses and professional learning communities.
- Resource sharing tools allow teams to share popular AT tools and websites.
- Digital storytelling tools allow teams to share AT success stories.

For more specific examples of tools that increase the effectiveness and efficiency of AT services, visit the NATE Network website: AT Teams Professional Toolbox (https://www.natenetwork.org/knowledge-base/resources-for-building-at-capacity).

Going Forward

There will always be a need for AT proficiency, but AT services can and must evolve to meet changing educational and technological environments. AT specialists may be invited or assigned to serve on instructional teams or integrated into IT services, or be asked to serve on special projects. Whether a district has a dedicated AT team or whether AT specialists serve on blended teams, the fundamentals of AT are important—it is a unique and valuable expertise. AT Teams that remain isolated run the risk of being overlooked and undervalued if they do not make their contributions known. Building the AT capacity of school teams is the right thing to do for all learners, not just some learners in the margins. It benefits the system as a whole, and is consistent with current educational frameworks that embrace learner variability. It is imperative that we move the field of AT to be able to serve more learners. Moving increasingly toward a capacity-building model of AT service delivery involves change. It may lead to changing the way AT service providers think about their role; it may require courageous conversations. It is time to reenvision AT services to advance the practice of assistive technology and ensure that all students can become expert learners. AT providers and AT teams should examine their practices, agree on a direction for change, and use their vision as a starting place to begin the next evolution of AT services.
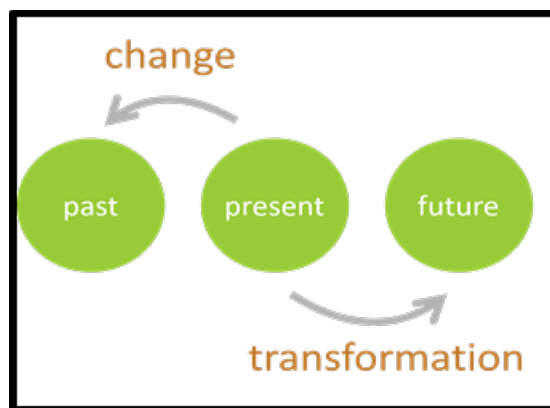
Figure 1: Change and transformation

Figure 1 illustrates two ways to go about defining a future state and a strategy to get there. The first is to stand in the present, look back at the past, and determine what to do. This usually results in improved outcomes and a more efficient future. The second is to stand in the present, visualize future opportunities divorced from the limitations of the past, and then start to create that future. The former cultivates change

and is the good work of managers. The latter brings about transformation and is the work of leaders. It is only by declaring a future and a way of being (vs. doing) that groups and teams produce extraordinary results.

There is no right or wrong, good or bad, in these two approaches. The important thing is to be clear on what you are trying to do and then pick the right approach. If you want incremental change to AT service delivery, go with the first. If you want transformation in the way you approach AT in your district or state, get ready to let go of your fears, doubts, frustrations, disappointments, and everything else that could get in the way of dreaming big to build AT capacity—to enable the next evolution of AT services.

For information on professional learning to guide capacity building in assistive technology, go to https://www.natenetwork.org/at-teamwork/.

Declarations

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References

American Psychological Association. (2018). *Effects of poverty, hunger and homelessness on children and youth.* Retrieved from http://www.apa.org/pi/families/poverty.aspx

American Psychological Association, Presidential Task Force on Educational Disparities. (2012). *Ethnic and racial disparities in education: Psychology's contributions to understanding and reducing disparities.* Retrieved from http://www.apa.org/ed/resources/racial-disparities.aspx

Assistive Technology Act, P.L. 105-394 (1998).

Bouck, E. (2016). A national snapshot of assistive technology for students with disabilities. *Journal of Special Education Technology, 31*(4), 183-194.

Bowser, G., & Reed, P. (2018). *Leading the way to excellence in assistive technology services: A guide for school administrators.* Wakefield, MA: CAST Professional Publishing.

Bowser, G., & Reed, P. (2012). Consultation, collaboration, and coaching: Essential techniques for integrating assistive technology use in schools and early intervention programs. *Journal of Occupational Therapy, Schools, & Early Intervention, 5*(1), 15-30.

Calderon, V. J., & Yu, D. (June 1, 2017). *Student enthusiasm falls as high school graduation nears.* Gallup Student Poll retrieved on June 10, 2018 from: http://news.gallup.com/opinion/gallup/211631/student-enthusiasm-falls-high-school-graduation-nears.aspx

DeCoste, D., & Bowser, G. (January, 2019). *The changing roles of AT teams.* Preconference seminar presented at the Assistive Technology Industries Association Conference.

DeCoste, D. (2014). *DeCoste Writing Protocol.* Volo, IL: Don Johnston Incorporated.

DeCoste, D., & Wilson, L. B. (2012). *Protocol for accommodations in reading.* Volo, IL: Don Johnston Incorporated.

DeCoste, D., Reed, P., & Kaplan, M. (2005). Assistive technology teams: Many ways to do it well. *National Assistive Technology in Education (NATE) Network*, Retrieved from www.natenetwork.org

Edyburn, D. L. (2000). Assistive technology and students with mild disabilities. *Focus on Exceptional Children, 32*(9), 1-24.

Individuals with Disabilities Education Act, 20 U.S.C. § 1400 (2004).

Kena, G., Musu-Gillette, L., Robinson, J., Wang, X., Rathbun, A., Zhang, J., Wilkinson-Flicker, S., Barmer, A., & Dunlop Velez, E. (2015). *The condition of education 2015* (NCES 2015-144). U.S. Department of Education, National Center for Education Statistics. Washington, DC. Retrieved from http://nces.ed.gov/pubsearch

Lammert, J. D., Johnson, L., & Fiore, T. A. (2015). *Conceptualizing capacity building.* Rockville, MD: Westat, Retrieved from https://osepideasthatwork.org/conceptualizing-capacity-building-0

Leithwood, K., Harris, A., & Hopkins, D. (2008). Seven strong claims about successful school leadership. *School Leadership & Management, 28*(1), 110-112 doi:10.1080/13632430701800060.

Michels, C. M. (2017). *The role of the assistive technology department in a special education cooperative.* (Unpublished doctoral dissertation, part 1). National Louis University, Milwaukee, WI. Author Contact Information: cmichels@nssed.org

Musu-Gillette, L., Robinson, J., McFarland, J., KewalRamani, A., Zhang, A., and Wilkinson-Flicker, S. (2016). *Status and trends in the education of racial and ethnic groups* 2016 (NCES 2016-007). U.S. Department of Education, National Center for Education Statistics. Washington, DC. Retrieved from http://nces.ed.gov/pubsearch

National Assistive Technology in Education (NATE) (2019).

National Educational Statistic Center. (2017). *Children and youth with disabilities.* Retrieved from https://nces.ed.gov/programs/coe/indicator_cgg.asp

Northouse, P. G. (2016). *Leadership theory and practice* (7th Ed.). Thousand Oaks, CA: Sage Publications.

The QIAT Leadership Team (2015). *Quality indicators for assistive technology: A comprehensive guide to assistive technology services.* Wakefield, MA: CAST Professional Publishing.

Quinn, B. S., Behrmann, M., Mastropieri, M., Bausch, M. E., Ault, M. J., & Chung, Y. (2009). Who is using assistive technology in schools? *Journal of Special Education Technology, 24*(1) 1-14.

Ranada, R., & Lidström, H. (2019). Satisfaction with assistive technology device in relation to the service delivery process—A systematic review. *Assistive Technology, 31*, 82-97, doi: 10.1080/10400435.2017.1367737

Reed, P. (1994). *Assessing students' need for assistive technology.* Oshkosh, WI: The Wisconsin Assistive Technology Initiative.

Reed, P. (2004). Critical issue: Enhancing system change and academic success through assistive technology: Themes from an outcomes summit. *Assistive Technology Outcomes and Benefits, 3*(1), 15-33.

Rowland, C., & Fried-Oken, M. (2010). Communication matrix: A clinical and research assessment tool targeting children with severe communication disorders. *Journal of Pediatric Rehabilitation Medicine, 3*, 319-329.

Technology-Related Assistance Act (Tech Act), P.L. 100-4007, (1988).

US Department of Education, Office of English Language Acquisition (January 2016). Fast facts: English learner (EL) trends from the nation's report card. Retrieved from https://www2.ed.gov/about/offices/list/oela/fast-facts/index.html

Woodward, J., & Cuban, L. (2000). *Technology, curriculum and professional development: Adapting schools to meet the needs of students with disabilities.* Thousand Oaks, CA: Corwin Press.

Wright, P. T. (2000). *Do co-ops make sense? An examination of special education cooperatives in Indiana.* (Doctoral dissertation). Indiana University. Available from UMI Microform (UMI No. 9981794).

Zabala, J. (1995). The SETT framework: Critical areas to consider when making informed assistive technology decisions. Retrieved from https://assistedtechnology.weebly.com/uploads/3/4/1/9/3419723/settshortpaper.pdf