

Fall 2024 Assistive Technology Issue



Visual Impairment and Deafblind Education Quarterly

Volume 69, Issue 4

The Voice and Vision of Special Education



VIDBE-Q

Volume 69

Issue 4

Cover photo description: The cover photo shows a wooden desk with a cup of coffee and three technological tools: pen and paper, a laptop, and a smartphone.

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Message from the Guest Editor

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Access technology has the potential to empower people and promote connections. Yet, as technology evolves, research consistently highlights how many practitioners find themselves overwhelmed and at a loss for keeping up and providing instruction. For anyone who has found themselves in this position: this special issue is for *you!*

The issue begins with a piece from Dr. Stacy Kelly, chronicling the importance of digital interactions and appropriate social media use in today's age. Keeping up with the range of devices and training required presents a challenge best met through collaboration and community, so the next several articles provide guidance in this area. Dr. Yue-Ting Siu describes how to build communities of practice to strengthen skills, while Dr. Michael Tuttle offers recommendations for team-based implementation of AT training and maintenance. Dr. Beth Jones shares specific strategies to guide TSVIs as they partner with general education teachers. Assistive technology professional Leslie Weilbacher illustrates how educational escape rooms (EERs) based on universal design for learning (UDL) can promote student use of assistive technology while working in groups of sighted peers.

As students transition from the K-12 school setting, they will need to use their AT skills across a range of different environments. Dr. Adam Wilton describes how TSVIs can pair design thinking principles with the Expanded Core Curriculum (ECC) to build capacity in creative problem solving. Young adults who are blind or have low vision will encounter different tasks that require assistive technology in the workplace, which means these skills will be more important than ever. Boydston et al. present results from two recent studies detailing AT device use by young adults at work, as well as what training they

received. This powerful information provides a preview of our students' futures and can help practitioners to work backwards and provide more specific training while students are still in high school.

Finally, for people inspired to learn more about AT, the last two articles in this issue provide perspectives and opportunities for the future. Dr. Kevin McCormack shares his experience of going back to school for assistive technology certification after working as a COMS for 17 years. As the new chairperson of AERBVI's Division 5, Dr. McCormack hopes to promote awareness of the importance of access technology within our field. To close out the issue, Sessler Trinkowsky et al. provide information on the Assistive Technology Certificate at University of Massachusetts-Boston. As a graduate of this certificate program, myself, I can attest to its rigor and quality.

My career has given me the opportunity to serve as a special educator, a Teacher of Students with Visual Impairments, a regional assistive technology consultant, a RESNA-certified Assistive Technology Professional (ATP), a Certified Assistive Technology Instructional Specialist (CATIS), and an assistant professor. My youngest student was 11 months old, while my oldest client ever was 95 years old. The more I learn about accessibility and technology, the more I realize there is to learn. While the steady pace of technological advancement ensures I will never "know it all," it also means that our students and clients will

continually have new opportunities and options. I choose to embrace this challenge, and I encourage you to do the same! Thank you to each of the authors of this issue for supporting students with low vision, blindness, and deafblindness, as well as our DVIDB members.

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President's Message

Adam Graves,

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Welcome to another issue of *VIDBE-Q*. For many of you who are receiving this issue the excitement of a new school year has likely moved into the phase of noting the progress that your students have made. One of the greatest joys of my career as a teacher in the field of disability education was the opportunity to take part in noting the achievements of the students with whom I worked. Sharing the notes of the students' progress with them and with the other members of the

Individualized Education Program team provided all of us with a chance to recognize and celebrate the with the students their many accomplishments and incredible growth throughout the course of the year.

It was such a joy to read in the last issue of *VIDBE-Q* about so many collaborative partnerships that are taking place in our field. From programs that address educational and vocational goals in Maine to a fashion show that promotes self-determination and other key elements of the expanded core curriculum in Arizona, it is clear that members of DVIDB are doing so much work to advocate for students who are blind, visually impaired and DeafBlind in every corner of the country and support them in striving toward higher goals and achieving more and greater success.

Soon we will be planning our DVDB social at the upcoming CEC convention in Baltimore. One of the highlights of our social event is the recognition of the achievements of our colleagues in the field. If you visit the DVIDB website, Facebook page, or check your email in the next few weeks you will find nomination forms for our awards. I encourage you to take a few minutes to complete one of these forms and nominate one of your colleagues to be recognized for the work they have done and the success they have achieved in our field.

In addition, I would encourage you to register for the two webinars that we have scheduled for October and November. In October, Belinda Rudinger and Cecilia Robinson will offer some guidance on how to promote fluency in the use of assistive technology and in November Erin Foley will share some insights on how to support the use of tactile graphics for students who are blind and visually impaired.

With each issue of *VIDBE-Q* we are reminded of just how much progress is being made in our field by our dedicated members and the many professionals working in blind, visually impaired and DeafBlind education. I hope that this issue provides you with a reminder to celebrate together and often all the many important accomplishments of your friends, family, colleagues, and students.



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Back to Basics: Cultivating an AT Mindset

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As new technology comes out at ever-increasing speeds, educators in the field of visual impairment often feel overwhelmed and unsure where to begin. Assistive technology (AT) offers powerful solutions, and yet practitioners may struggle to keep up with the sheer magnitude of possibilities. This presentation offers an alternative perspective and approach to working with students and clients in AT.

Embracing an “AT Mindset” will support practitioners in meeting the challenges inherent in this work, and modeling an AT Mindset for their students and clients. In addressing specific skills, this presentation highlights the differences between tasks, tools, and features in the context of AT use. As practitioners may struggle with where to start with AT evaluation and instruction, this presentation will focus on drawing from connected concepts with an asset-based approach. Participants will be reminded that many of the “basics,” or fundamental skills, remain the same even as technological options continue to grow and change.

With this focus on the fundamentals in mind, participants will be taken through a process of identifying the tasks their students need to accomplish. Participants will practice using feature matching to determine a range of appropriate tools for given tasks. Attention will also be given to embracing the challenge of technology and identifying useful strategies including experiential learning and promoting fluency in AT use. Finally, participants will walk away with resources to assist them in their work with students and clients.

Learning Objectives

1. Participants will identify three differences between a growth mindset and a fixed mindset as an approach to assistive technology.
2. Participants will provide three examples of assistive technology tools relevant to a given academic or functional task.
3. Participants will access a minimum of two resources related to assistive technology.

Speakers:

Belinda Rudinger, EdD, TSVI, ATP, CATIS
Texas A&M University-Commerce

Cecilia Robinson, MEd, TSVI
Texas School for the Blind & Visually Impaired, Outreach Programs

Digital Social Interactions: An Update on the Need to Support Students with Visual Impairments in their Social Media Use

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More than a decade ago, I authored a manuscript published in the Council for Exceptional Children (CEC) *Division on Visual Impairments Quarterly* journal that provided parents and teachers of students with visual impairments with strategies for supporting and monitoring their students' digital social interactions (Kelly, 2011). At that time, it was evident that social interactions were increasingly occurring through online platforms, presenting both opportunities and challenges for students with visual impairments. My previous manuscript was written prior to the advent and widespread use of most online social media platforms that are prevalent today such as YouTube, TikTok, Instagram, Snapchat, and X (formerly named Twitter) to name a few. Therefore, this article aims to provide an update on this topic of digital social interactions for educators (i.e., teachers of students with

visual impairments and other educational team members who support students with visual impairments) and parents of students with visual impairments.

More than anything else, it is important for parents and educators of students with visual impairments to be aware of the current prevalence and methods of social media and internet use among the general population of U.S. teenagers. In 2023, the Pew Research Center conducted their annual online survey of nearly 1,500 U.S. teenagers that was weighted to be representative of U.S. teenagers ages 13 to 17 who live with their parents by age, gender, race and ethnicity, household income, and other categories (Anderson et al., 2023). As I originally explained: “Lifelong social, academic, and professional success is now more dependent on digital social interactions than ever before” (Kelly, 2011, p.33). In the more than 10 years since my original publication on this topic, this dependence on digital social interactions has only grown exponentially to an all-time high that shows no signs of slowing down at any point in time. Notably, the vast majority of teenagers (ages 13 to 17) in the U.S. use YouTube and TikTok every day, and many report using these social media applications “almost constantly” (Anderson et al., 2023). YouTube is the most dominant source for social media among U.S. teenagers ages 13 to 17 with TikTok being the second most frequently used platform, Instagram being the third most frequently used platform, and Snapchat being the fourth most frequently used platform (Anderson et al., 2023). Nearly

three-quarters of U.S. teenagers (71%) use YouTube daily, while the majority of teenagers (58%) report the same about TikTok (Anderson et al., 2023). About half of U.S. teenagers use Instagram (51%) or Snapchat (47%) at least once a day, while 19% report daily use of Facebook (Anderson et al., 2023). Furthermore, nearly half of U.S. teenagers (46%) say they use the internet “almost constantly.” Notably as well, this number of teenagers who are using the internet “almost constantly” is roughly double the 24% who said this in a Pew Research Center 2014-2015 survey. Anderson et al. (2023) found that teenagers are less likely to be using Facebook and X than they were ten years ago. Facebook use has declined drastically from 71% in the Pew Research Center 2014-2025 survey to 33% in the most recent year and only 19% of U.S. teenagers reporting daily use of Facebook (Anderson et al., 2023). Thus, the most current research on U.S. teenagers revealed that YouTube is the most dominant source for social media among U.S. teenagers ages 13 to 17 and Facebook, the social media platform that once dominated the landscape of social media for these U.S. teenagers is no longer a widely popular option (Anderson et al., 2023).

Parents and educators of students with visual impairments need to follow these trends in the general population of U.S. youth that have evolved drastically and continue to evolve at a rapid pace to provide students who are visually impaired with the most robust social experiences possible. One of many possible

methods parents and educators can use to following the trends is doing a Google search using keywords such as “teenagers and social media” or “social media use among children” that provides many interesting and up to date results. Thus, a simple Google search can provide information about the latest trends.

Digital social interactions encompass a wide range of activities conducted through digital platforms such as social media, messaging applications, and online forums. These interactions are essential for youth in fostering relationships, participating in social communities, and accessing information. For students with visual impairments, accessing and engaging in these widely used digital spaces requires adaptations and specialized strategies to ensure accessibility and inclusivity. As I explained in 2011, social well-being now includes the digital aspect of social experiences as well as the traditional in-person facets of social skills (Kelly, 2011).

Many of my recommendations are still relevant today even though the technology involved has evolved considerably (Kelly, 2011). Collaboration is at the center of making this work for students with visual impairments. It will benefit students to apply in-person and online social skills learned during the school day at home and vice versa (Kelly, 2011). Access to the appropriate assistive technology tools and training is a vital part of participation in online experiences for students with visual impairments (Kelly, 2011). Additionally, cybersecurity awareness and

internet safety are critically important (Kelly, 2011). Students with visual impairments who engage in digital social interactions need to be educated about cybersecurity risks and strategies for maintaining online privacy and security. Discussing topics such as creating strong passwords, recognizing phishing attempts, and reporting incidents of cyberbullying or online harassment are a few examples to start this conversation about guidance for safe and ethical online behavior. Given the almost constant use of the internet and many social media applications reported by many U.S. teenagers (Anderson et al., 2023), it is more important today than ever to promote a balanced approach to digital content by also encouraging offline activities, hobbies, and face-to-face interactions that complement digital engagements. Lastly but not least, educators and parents have a shared responsibility to stay well informed about the platforms children are using online, monitor their student's digital interactions and provide guidance and support as needed, set appropriate boundaries for screen time and online interactions, and engage in open discussions with their students about responsible digital behavior.

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It is time to honor the wonderful people of our field who do so much to ensure our students are receiving access to the education they deserve as well as the services they need. Please take time to honor an amazing person in your life. We have five awards that we like to give out each year. Nominations are easy.

DVIDB Distinguished Service Award:

The DVIDB Distinguished Service Award recognizes exemplary leadership and commitment to the education and rehabilitation of students with visual impairments and deafblindness.

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The DVIDB Exemplary Advocate Award recognizes exemplary advocacy and commitment to the education and rehabilitation of students with visual impairments and deafblindness.

Teacher of the Year Award:

The DVIDB *Teacher of the Year Award* honors a person who is an exceptionally dedicated, knowledgeable, and skilled certified Teacher of Students with Visual Impairments or a Certified Orientation and Mobility Specialist in any state-approved or accredited day or specialized school who serves students who are visually impaired, ages birth through 21, with or without additional disabilities.

Virginia M. Sowell Student of the Year Award:

The DVIDB Virginia M. Sowell Student of the Year Award recognizes a student who demonstrates a commitment to the education and/or rehabilitation of individuals with visual impairments and deafblindness. The award was named after Dr. Virginia Sowell, whose lifetime contributions to the profession impacted the lives of numerous educators and countless children and adults with visual impairments and deafblindness.

Outstanding Dissertation of the Year Award:

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A Playbook for Deploying Communities of Practice Within Train-the-Trainer Programs

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Needs for ongoing professional development, and specifically professional development of teachers of blind and low vision students (also known as Teachers of the Visually Impaired (TVIs) or Teachers of Students with Visual Impairments (TSVIs)), are critical to sustain high quality practices in a field where tools and challenges are ever-changing. In the case of TSVIs' professional development related to access and assistive technology (AT), the volume of training needs seem to outweigh available resources more often than not. Interventions for remediating and sustaining TSVIs' technology skills can vary between pre-service and in-service contexts, and despite an infinite variety of training modalities, never feel sufficient to meet every training need. This article is written with three goals in mind:

1. To reflect on twenty years' of experience honing train-the-trainer approaches regarding AT training with TSVIs';
2. To present a snapshot of how Wenger's community of practice (CoP) framework (2015) can link to practical deployment of strategies that sustain AT-oriented CoPs among TSVIs;
3. And to share a playbook of specific strategies for consideration when a train-the-trainer approach is selected as a mode of professional development.

While the term “community of practice” (CoP) is used often with varying definitions, the term as referenced in this article will refer to Wenger's conceptualization that requires three characteristics to be present in order for a group to be considered a CoP (1998):

- *Domain.* Members of a CoP have a shared interest and commitment towards a topic for learning.
- *Community.* Relationships among members are built to support collective expertise through joint interactions and exchanges of information
- *Practice.* Members develop a shared set of tools and experiences that help with collective problem-solving and contribute to an evolving knowledge base across the CoP

In the context of supporting TSVIs' technology proficiency, a CoP can be the basis for ensuring the sustainability of a training effort while achieving a higher

return on investment beyond the initial training event. Based on a study of 505 TSVIs in the U.S. and Canada, there is already a known and positive relationship between TSVIs' membership to a CoP and their level of AT proficiency (Siu and Morash, 2014; Morash and Siu, 2016; Siu 2016). When considered within a train-the-trainer model, CoPs are critical to the successful facilitation of efficient and strategic program operations. Most importantly, CoPs can impact how well a TSVI can keep up with the technology knowledge that students need for us to have.

From an operations perspective, CoPs provide a maximum return on investment (ROI). Similar to a multi-level marketing strategy, a single investment—in this case one AT training event—can perpetuate cascading tiers of impact beyond the initial workshop participants. This happens when workshop participants are provided with initial training resources, ongoing support to train others, and feel empowered with adequate knowledge to share. Empowering every workshop participant to leave with an engagement with a CoP helps ensure they have ongoing professional development to sustain new skills; can expand the reach of their expertise; and develop a unique support system to troubleshoot new challenges. The result of building communities of practice as part of a train-the-trainer program is a system that becomes more effective and efficient over time, with multiplying levels of impact without needing increasing levels of resource investment.

From a human resources perspective, coordinating a successful train-the-trainer initiative is inherently a people-oriented endeavor. It is dependent on building relationships to ensure buy-in and engagement in a community of practice. Without community engagement, there is no self-perpetuating system of ongoing and evolving professional growth. Without a CoP, training efforts have limited impact as closed one-off events. Without the evolving body of knowledge that a CoP offers, some training participants may never imagine themselves in a position to share expertise with others. In the case of a train-the-trainer program for AT, the ultimate measure of success is best captured by the number of training participants who leave feeling like they've not only learned the technology but can also teach it.

The “Playbook”

With conscientious nurturing of CoPs as the bedrock of a train-the-trainer program, a lot can be accomplished with very little. With recognition that many more ideas abound, here are a few specific “plays” for developing communities of practice within a train-the-trainer program:

- Minimize 1:1 trainings; instead, always try and curate a group of training participants with a similar training need to ensure a shared domain of interest.

- Set the expectation that upon workshop completion, every participant should leave with an idea of what and how they can teach to someone else—tomorrow.
- Design collaborative hands-on activities for participants to become familiar with each other’s areas of expertise and build relationships; these activities are possible across in-person, online, or hybrid training modalities
 - Examples: group assignment to complete a task; group work to troubleshoot a problem; contribution to a shared group document
- Design opportunities for participants to experience the “practice” element of a CoP while gaining confidence with new tools and skills
 - Examples: hands-on activities with AT throughout a training event; practice AT within workflows similar to how the device will be used within a task; use a task analysis approach to breakdown how to use and teach AT within a task
- Offer space before, during, and after trainings for relationship-building and resource sharing; this space can be in-person, online, or both
 - Examples: Submission of questions that can be reviewed by the group (including participants and trainers) prior to a training; a shared note-taking document during a training; an online “chat” where participants can post questions or comments without interrupting the presenter; a

communication platform where ongoing questions and information can be exchanged after a training

- Considerations: It is important to understand participants' preferences for engagement. Some web-based tools can require additional technology proficiency, while other tools may require a social media account. Whatever tools that are selected should be fully accessible for all participants (ex. equitably usable with assistive technology and diverse communication needs, maintain confidentiality as desired)
- Offer a variety of engagement and communication options during and after a training event to accommodate different interaction needs and build relationships.

Discussion

As part of the practice aspect of building CoPs, this playbook is meant for free use and open sharing among anyone interested in promoting a community of practice within teacher training or professional development, and especially as part of a train-the-trainer program. However, be aware that one of the most interesting challenges of achieving training goals with communities of practice is that it requires creativity in how success is measured. Simple metrics such as number of trainings conducted by program trainers and number of workshop participants in

initial training events do not adequately capture a full measure of program impact; these numbers function as a mere starting point in describing the initial tier of training in a multi-level structure. As the impact of a community of practice spreads, metrics may seem ethereal and require a more holistic measurement approach that include both quantitative and qualitative measures. Individual gains may be better measured as collective gains. For example, when singular drops of dye are dropped in a glass of clear liquid, it is easy at first to count the number of colored drops. Once there is a critical mass of drops, the amount of dye must instead be measured in terms of percent saturation rather than number of drops. As related to CoPs within a train-the-trainer program, it would only be to our students' greatest gain to have our professional field so saturated with technology training (and by extension, proficiency) that we must report impact in terms of collective gain rather than singular drops. Although acknowledged as a program evaluation challenge, know that the challenge can be easily overcome by more sophisticated measurement approaches (Wilson, 2023). An evaluation challenge should not deter program administrators from committing to a train-the-trainer strategy simply because the impact will require more nuanced measures.

In the field of education, teachers often express that their goal is to “teach themselves out of a job,” meaning that the goal of instruction is for students to become self-determined and independent. While this phrase is often expressed, in

practicality there are always more students to reach and more topics for teaching and learning. Rest assured that while a successful train-the-trainer program empowers trainees to share their knowledge with others, there will always remain a need for experienced technology trainers to seed initial knowledge and model expertise. This type of program will rarely, if ever, actually put anyone out of a job.

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Supporting Implementation of Technology in Classrooms

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Assistive technology (AT) plays a vital role in access for students with visual impairment. Through AT, students can engage with information to accomplish a task, whether using devices (e.g., braille notetakers, screen readers, screen enlargement software, video magnifiers) or applications and settings on classroom technology (e.g., pinch zoom on a tablet, using a smartphone to take and view a picture of content on a whiteboard). Despite the promise of AT, student implementation of technology is not always a smooth process. Tuttle and Carter (2023) documented that utilization of AT varies widely across students. Specifically, some students used AT as much as 87% of the time they were in class while other students used AT as little as 10% of the time they were in class. Of note, these classes were classrooms where participants reported they were most likely to use their AT.

Getting students to use the technology procured for them has been an issue in the field of special education for decades (e.g., Lamond et al., 2023; Phillips & Zhao, 1993). *Written implementation plans* are one of the ways advocates and researchers have tried to address disparities between the positive potential impact of technology and low rates of use (Bausch et al., 2015). A written implementation plan serves as an intentional way to document how AT is intended to be used in different contexts of a student's educational routine and to identify who is responsible for supporting the implementation of technology. Moreover, there are a wide range of devices available to students with varying features which can be clearly documented within a written implementation plan. Teachers of students with visual impairments (TSVIs) and AT specialists who might lead the selection of AT devices and software cannot support students throughout their entire school day. Thus, promoting ownership of AT implementation from other educators and making shared expectations clear is imperative for holistic support of AT implementation.

The development of written implementation plans is guided by a form (see Figure 1) that is usually completed by a student's individualized educational program (IEP) team, however, it is not a legally binding document or formally required by IDEA (2004). The sample written implementation plan covers several areas, including: (a) student information, (b) implementation team, (c) equipment,

(d) training, and (e) classroom implementation. In the following sections, I will describe the type of information that should be included in each area of a written implementation plan in more detail.

Student Information

First, fill out the Student Information section as specified on the form. In particular, the team should clearly identify a target goal based on current assessment data, educational expectations, or access needs. Goals can be pulled from the IEP but can also be additional requests offered by the educational team to promote success in the classroom. Baseline data or descriptions of student skills help contextual progress monitoring in the classroom implementation section on IEP goals involving AT and whether adjustments to the plan are necessary.

Implementation Team

To begin, fill in the names of the team members. Oftentimes, team members will overlap with members of a student's IEP team. However, an implementation team member does not necessarily need to be a part of the student's IEP team. The TSVI, general education classroom teacher, special education teachers, parent, student, and relevant related service personnel (i.e., speech language pathologist, occupational/physical therapists, hearing specialist, and orientation and mobility specialist) should all be considered or contacted to be a part of the implementation team. Highlight the name of a team member to serve as the point of contact for the

plan to coordinate the plan and monitor its implementation. This person will collect progress data from other members of the team and call for meetings to evaluate adherence to the plan and potential changes to the plan.

Equipment

Once the implementation is determined, the team must list the equipment and software the student uses. Second, the team should also indicate the status of the equipment, which clarifies whether the device belongs to the school system, the student, or another entity. The status should also indicate whether the device is currently available for use or whether it is in progress for being procured or repaired. Finally, the team should list the specific tasks in which the device or software is expected to be used (e.g., completing worksheets, communicating with classroom teachers, research, etc.).

Training

AT for students with visual impairment is not intuitive and often requires training. Training is needed to ensure that members of the AT team are knowledgeable and confident in implementing their responsibilities in the implementation plan (see *Classroom Implementation*). This includes the educators, students, and their families. For example, training could include such tasks as teaching a student how to navigate a desktop or training an educator to reference a command list or task analysis to support a student in completing a task. In the

training section, the implementation team must identify the different training modules needed (i.e., the specific skills or content that needs to be covered). In this subsection, the team should also identify who will provide the training, as well as the training materials that will be made available to trainees. The team will also need to identify who will need the training and schedule times to implement the trainings. The implementation plan should document that training took place (e.g., collecting signatures of trainees) once the trainees demonstrate some level of competency related to the content outline in the implementation plan.

Classroom Implementation

In the final section, the team should list the specific goals identified in the *Student Information* section identify the team members who will teach or reinforce the skill across all areas of the student's educational routine, the timeline the goal should be met, and progress on the implementation of the goal. For target or goal, the team should describe how the student will be taught the goal (specifying the AT being taught), as well as support or instructional strategy used to meet the goal. The team must also determine measures to evaluate the student's progress on the goal and how frequently the data will be collected. These may be in reference to other data collection tools related to progress on a goal (e.g., checklists, percentage of independent steps in a task analysis, words correctly typed, etc.).

Figure 1

Sample Written Implementation Plan Form

Sample Assistive Technology Implementation Form

Student Information

Student: _____
Date: _____
Grade: _____

Areas of Difficulty:	Baseline Level of Function (PLEPS):	Projected Outcomes (Targeted Goals):

Implementation Team Members

Case Manager – _____	Parent – _____
Teacher of Students with Visual Impairment (TSVI) – _____	General Educator– _____
Assistive Technology Specialist (AT) – _____	General Educator– _____
General Educator– _____	General Educator– _____
Other – _____	Administrator - _____

Assistive Technology

Equipment and Software Used	Status	Task

Training

Training Module	
Date	
Person Trained and Initials	

Classroom Implementation

Action Steps Required to Achieve Outcomes:	Team Member Responsible:	Projected Timelines:	Review Date and Progress:

Summary

A written implementation plan can help educational teams ensure successful use of assistive technology. Often, students receive AT devices, but struggle to utilize them in classrooms. The sample form is intended to help TSVIs guide AT implementation by documenting (a) student information, (b) implementation team, (c) equipment, (d) training, and (e) classroom implementation to ensure clear understanding of roles across the educational team. By focusing on implementation, outcomes for students who use AT devices and services are more likely to be improved.

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LOW INCIDENCE SENSORY DISABILITIES



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GRADUATE PROGRAMS

Intervention Specialist: Visually Impaired Licensure Program

A 22-credit hour program offering graduate level coursework leading to licensure as a teacher of students with visual impairments (TSVI). The program is designed to be completed in one year and applicants must hold a valid Ohio teaching license. Coursework is mostly online with extensive face-to-face field and practicum experiences.

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A graduate level, 24-credit hour program offering coursework leading to licensure as a teacher of the Deaf/hard of hearing. The program is designed to be completed in one year and applicants must hold a valid Ohio teaching license. Coursework is mostly online instruction with extensive face-to-face field experiences.

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A graduate level, 15-credit hour program, leading to a certificate in Deafblind Education from Shawnee State University. This certificate will meet the post baccalaureate education needs of working professionals. The program courses provide in-depth knowledge of the needs of and supports for children with combined hearing-vision loss (also known as deafblindness) and is aligned with CEC standards for deafblindness

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A 30-credit hour program offering undergraduate level coursework leading to a Shawnee State issued Intervener Certificate. The Intervener Program is designed to be completed in two years. Applicants must meet the admission requirements at Shawnee State University. An intervener provides consistent one-to-one support to a student who is Deaf, blind or dual sensory impaired (ages 3 through 21) throughout the instructional day. Coursework is primarily completed in an online format, culminating with a field based practicum experience.

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Training General Education Teachers in the Use of Assistive Technology

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As an individual with a visual impairment, I utilize assistive technology (AT) on a daily basis. Additionally, both of my children are visually impaired (with very differing acuities) and rely on AT to access their general education curriculums. I am also immersed in the field, working as a Professor of Special Education and serving on the Board of Trustees for the Texas School for the Blind and Visually Impaired (TSBVI). Before my time as a professor, I served as a special education teacher in public education. It is from the frame of my personal and professional experiences that I have created a model for teachers of students with visual impairments (TSVIs) to use as a guide for familiarizing general education teachers with the AT our students depend on.

Collaborative Consolation on Assistive Technology

Teacher preparation is the primary predictor of student AT use; Specifically, the success and use of AT by students is related to the knowledge and skills of

their teachers (Connor et al., 2010; Flanagan et al., 2013; Judge & Simms, 2009). Furthermore, research has indicated that one reason AT is not fully utilized in classrooms is that teachers feel that AT is can only be implemented by a few trained individuals (Connor & Beard, 2015). Thus, teachers need to be trained regarding ways they can actively participate in AT decisions, implement recommended technologies, and monitor progress. In order to familiarize general education teachers with AT and considerations for its use, the following provides a step-by-step approach for TSVIs to use when meeting with general education teachers at the beginning of the year, when a new student moves in, or when IEP documents are updated. Table 1 provides a summary of the major points that correspond with each step.

Step 1: AT in the Individual Education Program

Teachers of students with visual impairments can begin by explaining how AT should be addressed in the individual education program (IEP). According to the Connecticut Assistive Technology Guidelines (2021), student's IEPs should provide one of the following: (a) documentation that AT was considered and is not needed by the student at this time (b) documentation that AT is necessary and how it will be used to support IEP goals, or (c) documentation that more data is necessary in order to determine the student's need for AT. Due to the challenges with regard to access faced by students with visual impairments, it is very likely

that the latter two of these options will be identified. This information could potentially be found in the present levels of academic and functional performance (PLAAFP), IEP goals, accommodations, or deliberations. In some states, such as Texas, the IEP paperwork contains a VI Supplement which addresses the nine components of the expanded core curriculum (ECC), which includes AT (Sapp & Hatlen, 2010). Teachers should be made aware of how they can support AT goals that involve keyboarding and hot key skill acquisition as well as student self-advocacy goals.

The *AT at a Glance* form is modeled after documents created as part of the Special Education Students at a Glance approach (Jones, 2012). This form aims to foster collaboration between TSVIs and general education teachers regarding implementation of AT use outlined in the IEP. The use of the *AT at a Glance* form serves to provide general education teachers with a way to become familiar with special education paperwork. Furthermore, it provides TSVIs an opportunity to witness each teacher's review of each student's records. The *AT at a Glance* form also allows the teachers to leave with a one-page summary of the AT needs of a particular student. This form could also be helpful for TSVIs to share information on the AT needs of a student with other vision professionals when caseloads shift, so that new personnel have a concise summary of the student's AT needs. Figure 1 provides a blank copy of the *AT at a Glance* form.

Table 1

Steps in the AT Collaborative Consultation Process

Critical Steps	Key Points
AT and the IEP	<ul style="list-style-type: none">• Found in PLAAFP, Goals, Accommodations, or VI Supplement; could include keyboarding, hotkey, and self-advocacy goals
Familiarity with Student-Specific AT	<ul style="list-style-type: none">• Video Magnifiers-portability?• Handheld Devices• Braille Displays• Screen Readers
Teacher Use of AT	<ul style="list-style-type: none">• Provide experience performing tasks while using AT• Training on built-in accessibility features• Helps teachers understand additional time needed to perform tasks with AT• Firsthand experience with literacy access or young kids who are learning to read and write under technology
Considerations for AT Use	<ul style="list-style-type: none">• Students with milder vision loss may not always need AT; must train kids to advocate for when/what type of AT is needed• The use of AT may reduce the need to enlarge print• Ways to leverage Universal Design for Learning• Have a plan for technical support and progress monitoring

Student: _____ Teacher: _____ Date: _____

AT at a Glance

IEP Goals Related to Assistive Technology: (Does this include any keyboarding or self-advocacy goals that the general education teacher can help facilitate?)

Please place an “X” beside the accommodations that are REQUIRED for this student

<input type="checkbox"/>	Reduce/modified exams without reduction of state standards	<input type="checkbox"/>	No penalty for spelling
<input type="checkbox"/>	Individual test administration	<input type="checkbox"/>	Recorded/highlighted materials
<input type="checkbox"/>	Reduced/modified assignments without reduction of state standards	<input type="checkbox"/>	Large print materials
<input type="checkbox"/>	Access to audiobooks (ex. Learning Ally/Bookshare)	<input type="checkbox"/>	Colored overlays
<input type="checkbox"/>	Opportunity to respond orally	<input type="checkbox"/>	Altered format of materials-How?
<input type="checkbox"/>	Read math problems aloud	<input type="checkbox"/>	
<input type="checkbox"/>	Oral exams	<input type="checkbox"/>	Slant Board
<input type="checkbox"/>	Extra time for oral responses	<input type="checkbox"/>	Handheld magnifier
<input type="checkbox"/>	Extra time for completing assignments/exams-How much?	<input type="checkbox"/>	Use of video magnifier
<input type="checkbox"/>	Exemption from reading before peers	<input type="checkbox"/>	Braille Display
<input type="checkbox"/>	Verbal instructions	<input type="checkbox"/>	Tactile Graphics
<input type="checkbox"/>	Teacher check for understanding	<input type="checkbox"/>	Augmentative communication device
<input type="checkbox"/>	Visual or auditory aides	<input type="checkbox"/>	Word processor or Tablet
<input type="checkbox"/>	Peer working arrangement	<input type="checkbox"/>	Accessibility Software/Screen Reader
<input type="checkbox"/>	Electronic submission of assignments	<input type="checkbox"/>	Other: _____
<input type="checkbox"/>	Provide correctly completed samples	<input type="checkbox"/>	
<input type="checkbox"/>	Study sheets/preview/summaries	<input type="checkbox"/>	Other: _____
<input type="checkbox"/>	Copy of class notes	<input type="checkbox"/>	

Does the student require AT for all reading and writing tasks or does the student need the flexibility to choose when/what equipment to use?

If needed, how will brailled assignments be submitted and graded?

Technical Support Action Plan:

Step 2: Teach the Student-Specific Technology

While familiarizing teachers with the AT requirements of the IEP, TSVIs can show examples of the listed technology. Often general education teachers will not have any background experience or knowledge of the devices utilized by students with visual impairments or the capabilities they provide. For this reason, it is especially important to provide examples of specific devices (e.g., video magnifiers, handheld magnifiers, braille displays, and screen readers) and tasks that can be completed with the AT. For example, a TSVI could demonstrate how a student could use their device for magnification when building circuits. This can help the teacher feel less apprehensive about how to teach particular concepts to the student with the visual impairment.

In preparation to write this article, my son's former pre-engineering teacher, Ms. Christian Gober (who he had for both 7th and 8th grade), shared the following about the inclusion of students with visual impairments, especially in STEM related coursework:

I would tell [other general education teachers] to not "sweat the small stuff". Sometimes teachers get caught up in thinking they have to teach every little thing. When working with students [with visual impairments], you don't have to be so particular about every little thing. [Students] can show you they are learning and getting the information without needing it to

be too specific or too drawn out. They don't need 20 problems, if they can show you in 5. If the teachers are having trouble with ideas on how to [adapt], don't be afraid to reach out to a colleague and work out some ideas, it sounds overwhelming at first, but it's really easy once you get the hang of it. Don't be afraid of the challenge, it will actually make you a better teacher for all your students. This is an opportunity you don't want to pass up, it will leave you with a lasting impression and a new way to look at how you [adapt] your work for students. You will be better for it.

Please see Figure 2, 3, and 4 for examples of how this teacher used AT to provide access to the pre-engineering curriculum.

Figure 2

Example of Using AT to Access the General STEM Curriculum

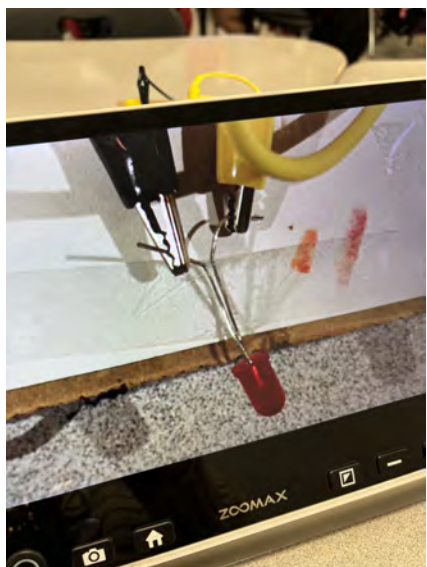


Figure 3

Students Using AT to Code for Light Detection



Figure 4

Students Connected Gator Wires to the Microbit



Step 3: Have Teachers Use the Technology

When showing teachers student-specific technology, it can be enlightening to have them practice completing tasks using the technology. For example, TSVI's can have teachers send an email or read a document while using magnification devices. For younger children especially, it is important for teachers to experience the unique way in which they are having to learn to read and write. Additionally, instruction on built-in accessibility features (e.g., hotkeys for magnification and inverting color, narrator) that are available to everyone, but often crucial for a student with a visual impairment, is also important. This affords teachers the opportunity to experience the unique skill set required to operate in this manner to perform daily activities. While experimenting with AT, teachers need to be prompted to think about both the advantages and disadvantages of AT devices.

Step 4: Familiarize Teachers with Considerations for AT use

This firsthand experience with AT can lead into a conversation about considerations for AT use as well as some guidelines for implementation. For example, students with less vision loss may not always need AT. Students must be encouraged to advocate for when and what type of AT is needed. This can seem counterintuitive to teachers who naturally think that students need the AT for every task they do. Additionally, teachers need to be aware that there is often a need for extended time while using AT, as students often cannot see the whole screen or

document at one time. It can also be pointed out that AT may reduce the need to enlarge print and that, when using magnification, enlarging print can actually result in the student seeing less of the text at one time.

A connection should also be made between AT and universal design for learning (UDL). UDL provides a framework for designing the learning environment to be inclusive and accessible by adapting the means by which information is represented, how the learner is engaged, and how knowledge is expressed (CAST, 2024). While UDL takes an environmental view of adaptations compared to the individual use of AT, the implementation of UDL can sometimes reduce the need for AT. On the other hand, AT can also make UDL more effective (Rose et al., 2005). Teachers of students with visual impairments can help teachers understand that

AT and UDL, while different, are completely complementary—much like two sides of the same coin [and] that advances in one approach prompt advances in the other...Through a better understanding and melding of AT and UDL, we believe that the lives of individuals with disabilities will ultimately be improved (Rose et al., 2005, p. 507).

Teachers of students with visual impairments could illustrate this point by sharing how the use of platforms with read aloud capabilities built in (e.g., Eduphoria or

the Kami extension in Schoology) could reduce the need for the student to use specific AT for the same purpose.

The TSVI and general education teacher should also work out a plan for technical support to address any potential problems with the AT. TSVIs need to explain clearly that students require their AT as a lifeline to access the curriculum, and they cannot be without it for extended periods of time. The TSVI can help general education teachers focus on the purpose of specific AT for a student and facilitate a discussion around the fact that there can be many tools that offer similar features. This can be helpful in the event of technical issues with technology when additional options become important. Lastly, teachers should establish a plan for progress monitoring specific to the use of AT. This includes providing teachers with ideas of what type of data that would be helpful in making future AT decisions.

Conclusion

Student success and use of AT is related to the knowledge and skills of their teachers (Connor et al., 2010; Flanagan et al., 2013; Judge & Simms, 2009).

Therefore, teachers need to be trained regarding ways they can actively promote successful AT use across environments. TSVIs can use this step-by-step approach when meeting with general education teachers at the beginning of the year, when a new student moves in, or when IEP documents are updated. This process can

ensure that teachers are exposed to the AT our students require, understand how to leverage UDL to maximize AT potential, and recognize the implications associated with AT use.

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Co-Designing More Accessible Futures with the Expanded Core Curriculum

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Knowledge and skills in the core areas of the Expanded Core Curriculum (ECC) have long been regarded as essential to meaningful engagement and success at school, in the workplace, and in the community for blind and low vision learners, including those with more complex profiles (Sapp & Hatlen, 2010). However, if ECC instruction does not also equip students to problematize and address the accessibility barriers that necessitated ECC skill development in the first place, that instruction is fundamentally compensatory. This article proposes that by fostering design thinking and engaging blind and low vision learners in co-design, teacher of students with visual impairments (TSVIs) can shift the orientation of ECC instruction from compensatory to emancipatory.

If the student does not have the tools and opportunity to transform the environment to be more responsive to their access requirements, they must instead compensate for an inaccessible status quo. For example, during access technology instruction, a low vision student learns to use an Optical Character Recognition

(OCR) scanning app to make print handouts accessible via text-to-speech and magnification software. This instruction is ultimately compensatory if it only equips the student with new knowledge and skills to address access barriers in the classroom while not also expecting (and equipping) the learning environment to be more responsive to the student's access requirements.

Co-Design and Design Thinking

Priorities for ECC programming are, in part, determined by the mismatch between blind and low vision students' access profiles and the affordances of the learning environment (Holmes, 2018). Through co-design, TSVIs can engage students as agents of change in the latter – ensuring more responsive and accessible opportunities for learning. In this context, co-design involves the meaningful centering of blind and low vision learners as both designers and end users of more accessible products, processes, and services (Biggs et al., 2022). Within this process, design thinking refers to “thinking skills and practices designers use to create new artifacts or ideas, and solve problems in practice” (Henrikson et al., 2017, p.141). The following vignette outlines a co-design process informed by design thinking within the ECC.

Vignette – Miranda and the School Kitchen Stove

Mr. Vargas is an itinerant TSVI working in a large suburban school district. One of his students, Miranda, is working toward achieving IEP goals related to self-determination and independent living skills. Miranda is a blind student in the seventh grade who would like to volunteer with her school's snack program. She would like to be able to independently use the stovetop in the school kitchen to cook simple meals (e.g., grilled cheese sandwiches). In planning to address this ECC programming goal, Mr. Vargas and Miranda determine that the stove in the school kitchen is inaccessible as there are no tactile markings on the control panel. Mr. Vargas enlists the help of one of Miranda's subject area teachers, Ms. Haj. Ms. Haj is Miranda's Design and Technology teacher and notes that addressing this design problem aligns with a learning outcome of her class. Ms. Haj helps to recruit three peers who will work with Miranda.

Design Problem: Miranda cannot independently use the school kitchen stove to prepare simple meals since all control panel labels are inaccessible.

Criteria for Successful Design: Miranda will be able to independently use the control panel of the school kitchen stove to adjust the heat of the stovetop elements while preparing simple meals.

Empathize

The first step in a Design Thinking framework is to conduct research to understand the requirements of users (Gibbons, 2016). Since the co-design process centers end users as designers as a first principle, this initial step requires that Miranda's peers get to know her access requirements in using the stove in the school kitchen as well as the barriers to use that she faces. This is an opportunity for Miranda to use her self-determination skills as she articulates her requirements and the design problem to the team.

Define

The second step in the framework requires the design team to define the user requirements and begin to look for opportunities to innovate. Miranda and the rest of the design team meet to identify the potential strategies, tools, and devices that they may require to develop solutions to the design problem. Using her compensatory access skills, Miranda shares the different types of tactile markers that she uses on a regular basis (e.g., elastic bands for juice containers, bump dots for microwave displays). Mr. Vargas also recommends some potential materials, such as puff paint.

Ideate

The third stage is to ideate. In the previous stage, the team learned that some of the tactile markers that they are interested in using are either permanent or semi-

permanent. As a result, they faced a challenge with prototyping different tactile marking configurations directly on a single control panel. The solution that the team developed was to create cardboard overlays that fit over the control panel of the stove. This way, Miranda and the team create and evaluate multiple prototypes. At this stage, the team brainstorms possible tactile marker layouts to represent the heat setting labels on the control panel dials.

Prototype

The fourth stage in the Design Thinking framework is to generate prototypes by creating tangible representations of ideas from the previous stage. The design team gets to work creating the individual prototype overlays. For example, one prototype indicated each heat level with an individual bump dot sticker with two bump dots at the “Off” position.

Test

Next, the team needed to test their prototype overlays. Each was affixed to the control panel of the stove and Miranda had the opportunity to use each to turn on the stovetop element, adjust the temperature, and turn off the element. Using her independent living skills, Miranda even prepared a few grilled cheese sandwiches for the team. Her teammates asked for her feedback on each overlay – what was easy to use, what was confusing, etc. Miranda engaged her social

interaction skills to provide constructive feedback to the rest of the team. Based on Miranda’s feedback, the entire team decided on which prototype to implement.

Implement

Finally, the team implements the most effective solution based on the results of the previous stage. The design includes foam dots to mark the “Off” position at the top of the dial and a dot of puff paint at each heat level around the dial. The “Low Heat” setting is marked with a row of two dots of puff paint and the “Max Heat” setting is marked with a row of three dots. See Figure 1 for a photograph of the implemented design.

Figure 1

Final Design Implemented on Control Panel of School Kitchen Stove.



Recommendations

By engaging in co-design processes to address design problems related to accessibility, blind and low vision learners become actors in the process of overcoming barriers to equitable access in their schools and communities. TSVIs can support the development of students' design toolkits:

- Critically examine instructional planning in ECC content areas to emphasize the design of collaborative solutions to access barriers in addition to compensatory knowledge, tools, and techniques.
- Connect learners with blind and low vision mentors who can help students to articulate access barriers and communicate insights gained through their lived experience to others.
- Work with students to so that they can recognize and specifically document access barriers. For example, taking photos and videos of a concrete staircase without high contrast markings, or documenting the conditions of a web accessibility failure (e.g., operating system and screen reader used at the time).
- With students, research and connect with agencies and businesses that employ disabled designers to learn more about potential future job opportunities (i.e., Fable Tech Labs, 2023).

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- **For Job Seekers & Employers:** Find employment information, tools, and guidance for job seekers who are blind or low vision or for employers who work with individuals who are blind or low vision.
- **VisionAware:** Designed for adults and seniors who are living with vision loss.
- **ConnectCalendar:** For use by the entire blindness field to find and promote events, all in one place. [Promote and share](#) your organization's event by adding it to the Calendar or [discover upcoming events](#).
- **APH ConnectCenter Transition Hub:** Planning for graduation and life after school brings up a lot of questions. Find information about transition programs that emphasize empowerment, career exploration, and work experiences for teens and young adults who are blind or low vision.



ConnectCenter
for Families



ConnectCenter
for Job Seekers and Employers



VisionAware™
For independent living with vision loss

You Cannot Escape from AT and UDL

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Inclusive education is a buzzword in schools and the educational field. This article offers practical strategies using Universal Design for Learning principles (UDL) with engaging activities that can be scaffolded for a range of students. Utilizing the exemplar of an Educational Escape Room activity, we will explore the universally designed features of various options, along with ways to incorporate these UDL strategies further in a classroom. By leveraging these principles and strategies, one can foster a student's inclusion in classroom activities.

UDL & AT

Federal law (IDEA-I, Section 300.5) defines an assistive technology (AT) device as “any item, equipment, or product system (commercially off the shelf, modified, or customized) that improves the functional capabilities of a child with a disability” (2004). Frequently, AT is assumed to only apply to the most complicated and expensive high-tech device (Koch, 2017). This focus on high tech

ignores the broad nature of the educational AT definition; therefore, we should recognize the value of low-tech tools alongside high-tech ones.

UDL emphasizes flexibility and inclusivity in education. UDL principles address the “why,” “what,” and “how” of learning (CAST, 2004). The UDL principle of multimodal representation recognizes that learners have diverse needs. By combining various sensory channels (visual, auditory, and kinesthetic), educators create richer learning experiences. For children with sensory impairments, multimodal representation is essential. As part of the UDL framework, AT enhances multimodal representation. For example, a student listening to a teacher read a story can simultaneously access the same story in braille. Additionally, the student can explore the story’s pictures using a video magnifier. AT bridges sensory gaps, allowing students to engage with content through different channels.

In the assistive technology field, we consider the consumer, the activity/task, the technology, the environment, and the context (which includes the social element) (Cook & Polgar, 2015). For the purposes of this article, the consumer is a student who is blind or visually impaired with or without additional disabilities, and the activity/ task is participation in a universally designed Educational Escape Room (EER) utilizing their AT. The environment is the general education classroom on a team with same-age peers who are not blind or visually impaired.

Educational Escape Rooms

An Educational Escape Room (EER) incorporates “live-action team-based games in which players encounter challenges to complete a mission in a limited amount of time...Escape Rooms are often adapted in the educational setting to be puzzles, boxes, or tasks.” (Veldkamp et al., 2020 p. 31). One example of an EER is Sherlock's Escape Room, which I developed with input from Stephanie Walker. It focuses on skills related to science activities, such as locating the parts of a cell. All students can use all the materials; therefore, separate materials are not needed for the student who is blind or visually impaired.

Figure 1

Picture from Sherlock's Escape Room



In Sherlock's Escape Room, five riddles are given in a sequence in a scenario modeled after a Sherlock Holmes mystery. The story directs the team through each activity culminating in completing the code to a padlock and opening a box. UDL elements include showing the riddles on a PowerPoint presentation and playing an audio recording (with a British accent for fun). These pieces were provided automatically to allow multimodal access for all students, rather than calling out an individual student.

Figure 2

Leslie Weilbacker and Stephanie Walker, designers of Sherlock's Escape Room



Another section of Sherlock's Escape Room uses the Build-A-Cell, a model of bacteria, animal, and plant cells with colorful tactile pieces that the student attaches to explore the organelles (APH, 2004). The informational book is in color, large print and a braille copy is included. This item is interactive with physical pieces to move to answer the riddle. Once the correct organelle is located by using the book, the students find a number underneath that piece. This activity provides an opportunity to encourage a student who reads braille to not only participate at the same time, but to be the one the team relies on to read the section of the informational book to identify the correct organelle.

According to Fotaris and Mastoras (2022), "EERs emphasize collaborative learning with activities that require teamwork and communication, force interdependence among multiple individuals who share a clear goal and provide a built-in opportunity for rapid and unambiguous feedback" (p.2). Thus, EERs are a tool for inclusion in the general education classroom and a springboard for social connections. Fotaris and Mastoras developed a framework for constructing EERs that could be built in a variety of scenarios, with no prior experience, using design thinking. For a teacher who wishes to utilize this model for a classroom activity, EER frameworks may help with structure. However, keeping UDL and access in the planning process from the beginning remains a vital part. Considering aspects of AT integrated into UDL further increases the likelihood of student success.

Recognizing the benefits of sound teaching models and incorporating AT into real-life scenarios builds a strong foundation of use cases for the student and their peers. "Functional outcomes are the only real measure of the success of an assistive technology device" (Cook et al., 2008 p. 5), making the escape room scenario a practical environment for assessing the student's skills. The EER is an activity that allows for universally designed practices. EERs have much to offer teachers and students in the learning environment. EERs features defined roles, teamwork, and built-in opportunities for using the AT in a way that demonstrates the purpose to peers and makes the student an active part of the team.

Designing for Accessible Outcomes

In a general education classroom, there are many opportunities for all students to experience life skills.

In an EER that recreates real-life circumstances, participants will also be able to reflect on their own life. Students can experience a situation in which they need to respond to high-stake situations, trust their own and their colleagues' competence, work together as a team, settle differences in opinions, and handle both time constraints and the consequences of not working fast enough. (Fotaris and Mastoras 2022 p. 3)

With an EER, the educators in the classroom have other roles than direct instruction. "When to interrupt students' collaboration and what to address can be

challenging for teachers” (Veldkamp et al., 2020, p. 5). Recognizing when a team is struggling or is on the verge of solving the puzzle requires knowing the students and listening carefully to their interactions (Veldkamp et al., 2020). The monitoring of students during the activity, and the time spent debriefing after the activity, are both elements that are important and must be carefully balanced. For example, “Students did feel frustration and less ownership when staff gave guidance too early or gave no guidance when needed” (Veldkamp et al., 2020, p. 5).

From the beginning, EERs should be designed for accessibility using UDL and allowing for AT use in a social context. “Educators start their design process with defining educational goals, which guide choices on the puzzle path, the role of technology, and the teacher’s role during the gameplay” (Veldkamp et al., 2020, p. 10). To promote equitable access, these principles should be considered throughout the design process.

Conclusion

By integrating UDL principles and leveraging assistive technologies, educators can create inclusive and effective learning environments for all students. According to Veldkamp et al., “For STEM Escape Rooms, the rationale for goals on teamwork and communication is their role in active, team-based, and collaborative learning” (2020, p. 9). Areas of the expanded core curriculum

addressed by EERs include compensatory skills, social skills, self-advocacy skills, assistive technology skills, self-determination, and career exploration (Sapp & Hatlen, 2010).

In the case of students with visual impairment, deafblindness, or other disability, practitioners may not be aware that the added component of AT can loom large socially and educationally for individuals. According to Cook & Hussey (2008), “if the others in the environment do not support using the technology, the individual faces more significant challenges to successfully using the device” (p. 41). Students may feel that utilizing their AT to access the curriculum may create additional barriers to social acceptance in the classroom. Creating a situation, such as an Educational Escape Room, where the students' AT skills are perceived by peers in a positive way can address the need to balance social acceptance with AT use for access. As Sherwood and Kattari (2021) state, “modeling inclusive environments and centering all bodies and minds helps to shift student perspectives and, therefore, reduce ableism.” According to Sanford (2012), “Universal design reduces stigma by making invisible the modifications to the environment that make it more accessible” (p. 74).

The intrinsic value of UDL is that it does not point one individual out, addressing the need for social acceptance. Cooperative work on a team, be it in written instruction, or spoken language, allows students opportunities to use AT

naturally and inclusively. Creating welcoming environments (such as EERs) with a balance of intrinsic access through universally designed materials, roles that showcase skill, and opportunities for AT use in a natural context will promote success for all students.

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November 5th – November 8th, 2025
Huntsville, AL

Getting In Touch with Literacy 2025 CALL FOR PROPOSALS

Proposals related to all areas of literacy for individuals with visual impairments are now being accepted for presentations at the **Sixteenth Biennial Getting in Touch with Literacy Conference**. Hosted by Allied Instructional Services and Council for Exceptional Children Division on Visual Impairment & Deafblindness. Proposals that focus on the development and use of literacy skills at all ages, ability levels, and in all media, will be considered for acceptance at this premiere topical conference.

In order to give as many presenters as possible the opportunity to present at this final conference, proposals must be limited to a total of two sessions and one poster session per person. This includes presentations as either lead presenter or as a co-presenter.

The Getting in Touch with Literacy conference is a conference that includes underlying respect for literacy at all ages and ability levels. Presentations are encouraged on topics related to infants and toddlers, school aged students, and adults. Professionals addressing literacy skills in rehabilitation settings are encouraged to submit proposals.

To submit your proposal use the link:

<https://cec1785.wufoo.com/forms/rus1w5b0vhqxd/>

Below are what is required by each proposal. All proposals need to be submitted no later than January 31st. Program decisions will be finalized by the beginning of March and decisions will be communicated to submitters. For questions please contact Dr. Nicole Johnson at njohnson@kutztown.edu

**NOTE: ALL PRESENTERS MUST REGISTER FOR THE CONFERENCE.
PRESENTERS ARE RESPONSIBLE FOR THEIR OWN TRAVEL AND
ACCOMODATIONS.**

Name of Lead Presenter:

Affiliation:

Email:

Co-presenters' Names, Titles, Emails and Affiliation (if applicable):

NOTE: All presenters must be listed here to be included in the conference program. Write names, titles, and affiliations exactly as you want them to appear in the program.

Title of Presentation (as it should appear in the Conference Program):

Brief program description (as it should appear in the program and pre-conference advertisements - Limit of 50 words):

Type of presentation (all presentations are scheduled for 1 hour):

- Concurrent Session
- Panel
- Workshop (interactive)
- Poster
- Roundtable

Please provide a one-page description of your proposed presentation. Information shared might include the following:

- Overall purpose and relevance to literacy (limit to 300 words or less)
- Type of information being shared (i.e. research, practice oriented, medical).
- Targeted age group (early childhood, elementary, high school, adult, etc.) and population to which information best applies (students/adults with low vision, gifted students, struggling braille readers, students with multiple disabilities, etc.)
- Target audience (teachers of students with visual impairments, rehabilitation teachers, low vision therapists, transcribers, parents, students, or others)

AV Equipment

All rooms will be equipped with the following equipment:

- Speaker's table
- LCD projector
- Screen
- Speaker's podium

If you need the following items, please come prepared with your own equipment:

- Laptop computer
- External speakers
- Adaptors for your equipment

If you have additional AV needs, please specify your needs below. Please note that not all AV equipment requested will be available and there may be an additional charge to the presenter for unique requests, including wifi access.

Participants should have access to a table to prepare file folders with CVI activities.

All speakers must register for the conference and secure their own travel and hotel accommodations. Please check the conference website at www.gitwl.org or scan the QR Code for information regarding registration and hotel reservations.



Assistive Technology in the Workplace and Training Needs: Insights from Employed Young Adults who are Blind or Have Low Vision

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Our world is becoming increasingly digital, and digital skills are essential for today's workplace: a recent study found that 92% of jobs in the U.S. labor market require digital skills (Bergson-Shilcock et al., 2023). Digital skills can be defined as the ability to use digital devices (e.g., computers, tablets, smartphones) and software to find, evaluate, use, share, and create content. For most individuals who are blind or have low vision to possess digital skills, they must first be skilled with assistive technology (AT) that allows them to access digital devices and software.

Teachers of students with visual impairments (TSVIs) are often the primary professionals who provide AT training to children who are blind or have low

vision. Research has suggested that many TSVIs may not be well-prepared to provide this training (Ajuwon et al., 2016; Zhou et al., 2011, 2019). The number of AT tools and skills that high school students who are blind or have low vision should know more than doubled between 2004 and 2018, with 30 recommended AT tools and skills for youth who utilize braille in 2018 (Kelly & Kapperman, 2018). Keeping up to date with the increasing necessary AT and skills may be challenging for the students themselves as well as their TSVIs. Ultimately, the AT needed to succeed in school may likely also be needed in the workplace, but until recently, we have had little information about what AT is used at work by people who are blind or have low vision. The National Research & Training Center on Blindness & Low Vision (NRTC) began a research project in 2020 to learn more about AT being used in the workplace, challenges users experience with AT at work, and any gaps in needed and available AT.

The purpose of the present study was to provide information about the AT that employed young adults who are blind or have low vision are using at work as well as their self-reported need for training on their workplace AT. In addition, we wanted to provide information about how they learned to utilize their workplace AT and their self-perceived skill levels with the AT. We employed four research questions to guide our analyses.

1. What AT is used at work by employed young adults who are blind or have low vision?
2. How did employed young adults who are blind or have low vision learn to use their workplace AT?
3. What is the self-perceived skill level with individual AT for young employees who are blind or have low vision?
4. What percentage of employed young adults who are blind or have low vision would benefit from additional training on their workplace AT?

Method

Data Source and Sample

Data were obtained from the NRTC's longitudinal study about AT in the workplace. Using a panel design, survey data were collected annually between 2021 and 2024. Eligibility criteria for the study included being blind or having low vision, being 21 years or older, being employed or recently employed, using AT on the job, planning to work for the next 4 years, and living in the U.S. or Canada. After the authors' university's Institutional Review Board determined the study exempt from oversight, recruitment for study participants began in early 2021. Researchers utilized multiple avenues, including a national participant registry, previous research study participants, organizations for people with visual

impairments, social media, listservs, and blindness-specific websites. Potential study participants completed a prescreen survey to determine eligibility.

For the present study, data were obtained from Survey 1 and Survey 2. Data collection for Survey 1 occurred between May and September 2021. Survey 2 data collection occurred the following year, from June to August 2022. Additional recruitment occurred in 2022, resulting in new participants who answered selected questions from Survey 1 and all questions from Survey 2. Eligible participants were invited to complete each survey either online via a personal survey link generated by Qualtrics or by telephone.

To focus on younger adults who may have received AT training from a TSVI, we restricted the sample to currently employed participants born after 1980 who experienced vision loss before the age of 19. The final sample included 121 participants, whose demographic information is presented in Table 1.

Variables

Participants were asked to identify the types of AT they used at work by selecting from a list of 28 options in Survey 1. For research question 1, we focused on 20 of the most commonly used AT reported in Survey 1. The list of AT was revised for Survey 2, with the most notable change being the replacement of built-

in accessibility tools (on a computer) into two separate categories for built-in (computer) screen readers and built-in (computer) screen magnification.

Participants were asked to select all the methods they used to learn how to utilize the work AT they identified in Survey 2. Response options were: a) in school (by a TSVI), b) training provided through a vocational rehabilitation (VR) agency or agency for the blind, c) vendor who sold the technology, d) self-taught, e) tutorials, f) another person with blindness or low vision taught me/demonstrated, and g) other. Participants were then asked to identify which of the selected methods they considered the primary method used to learn each specific AT. This data was used to address research question 2. Some participants who completed Survey 1 did not complete Survey 2, resulting in a smaller sample size ($N=105$) for the learning methods variables.

To measure self-perceived skill level (research question 3), participants rated their skill level for each AT they reported using at work in Survey 1, using a scale from 1 (*beginner*) to 10 (*advanced*). To measure need for training on workplace AT (research question 4), participants who rated their workplace AT skill as 7 or lower were asked whether they would benefit from more training on that particular AT (yes/no).

Table 1*Sample Characteristics, Employed Participants Under Age 40 (Born After 1980)*

Variable	<i>n</i>	%
Age (in years)		
22-29	36	29.8
30-34	41	33.9
35-39	44	36.4
Gender		
Female	77	63.6
Male	44	36.4
Race/Ethnicity		
Hispanic/Latinx	13	10.7
Asian	10	8.3
Black/African American	9	7.4
White	81	66.9
Some Other Race	8	6.6
Education Level		
Less than Bachelor's degree	26	21.5
Bachelor's degree	45	37.2
Graduate or professional degree	50	41.3
Level of Vision		
Totally blind	74	61.2
Legally blind with minimal functional vision	26	21.5
Legally blind with some functional vision	15	12.4
Low vision, not legally blind	6	5.0
Age of Blindness Onset		
Pre-school (ages 0-4)	92	76.0
Primary school (ages 5-11)	13	10.7
Secondary school (ages 12 or older)	16	13.2
Non-Visual Disability		
Yes	34	28.1
No	87	71.9
Employment Type		
Employer job	106	87.6
Self-employed	6	5.0
Both	9	7.4
Income		
< \$40,000	45	37.2
\$40,000 to <\$80,000	52	43.0
\$80,000 or more	17	14.0
Prefer not to answer	7	5.8

Note. *N* = 121.

Analytic Strategy

We used SAS 9.4 to generate descriptive statistics (i.e., frequencies or means) for all variables.

Results

Table 2

AT Most Commonly Used in the Workplace

AT Type	Use	
	<i>n</i>	%
Screen reader software	103	85.1
OCR app	71	58.7
Built-in accessibility tools ^a	59	48.8
OCR software/hardware	45	37.2
Refreshable braille display	44	36.4
Remote sighted assistance app	40	33.1
Digital reading app	37	30.6
Braille notetaking device	35	28.9
Navigation/wayfinding app	30	24.8
Digital reading software/device	27	22.3
Audio recorder app	22	18.2
Screen magnification software	18	14.9
Other identification app	14	11.6
Dictation/speech recognition software	12	9.9
Electronic video magnifier	11	9.1
Handheld electronic video magnifier	10	8.3
Other built-in accessibility features	9	7.4
Orientation/wayfinding/navigation device	5	4.1
Wearable device	5	4.1
Digital labeling app	4	3.3

Note. Total $N = 121$. OCR = Optical Character Recognition.

^a Built-in accessibility tools were primarily screen readers/magnifiers but could include dictation software.

Table 2 shows the percentage of participants who use each type of AT for work, sorted from most to least commonly used. On average, participants reported using 6.50 ($SD=3.89$) types of AT at work. Computer screen reader software

(85.1%) was the most commonly used workplace AT, followed by optical character recognition (OCR) apps (58.7%) and built-in accessibility tools (48.8%), which could include built-in screen readers, screen magnifiers, or dictation tools.

Table 3

Learning Methods for Workplace AT

AT Type	<i>n</i>	In School (by a TVI)	Self-Taught	VR/Agency Training	Vendor	Tutorials	Person w/ B/LV
Screen reader software (3 rd party)	87	55.2	81.6	52.9	14.9	63.2	55.2
OCR app	66	---	95.5	12.1	4.6	24.2	22.7
Refreshable braille display	49	24.5	83.7	24.5	12.2	59.2	24.5
Remote sighted assistance app	48	---	91.7	2.1	8.3	20.8	22.9
Built-in screen reader	42	35.7	85.7	40.5	14.3	66.7	40.5
OCR software or hardware	41	19.5	75.6	31.7	14.6	36.6	43.9
Digital reading software/device	36	25.0	86.1	11.1	13.9	44.4	25.0
Braille notetaking device	32	53.1	75.0	34.4	34.4	53.1	37.5
Digital reading app	30	10.0	93.3	16.7	3.3	23.3	20.0
Navigation/wayfinding app	28	7.1	89.3	28.6	3.6	21.4	28.6
Audio recorder app	20	---	90.0	5.0	10.0	20.0	20.0
Other identification app	17	---	82.4	5.9	---	17.7	29.4
Other built-in accessibility features	14	21.4	71.4	35.7	21.4	57.1	14.3
Dictation/speech recognition software	13	23.1	84.6	23.1	7.7	61.5	23.1
Screen magnification software (3 rd party)	11	45.5	81.8	54.6	---	18.2	---
Built-in screen magnification	11	18.2	81.8	27.3	---	36.4	---
Orientation/wayfinding/navigation device	7	42.9	100.0	57.1	42.9	42.9	42.9
Handheld electronic video magnifier	6	---	66.7	50.0	33.3	16.7	---
Electronic video magnifier	6	33.3	33.3	50.0	16.7	16.7	---
Wearable device	5	---	80.0	20.0	40.0	20.0	40.0
Digital labeling app	5	---	80.0	---	40.0	40.0	---

Note. *N*=105. The ‘Other’ method option is not shown. TVI = teacher of students with visual impairments. VR = vocational rehabilitation. B/LV = blind or low vision. OCR = Optical Character Recognition.

Table 3 presents the percentage of workplace AT users who reported using each learning method, sorted by the number of users for each AT. Self-teaching was a predominant method, reported for each type of AT. Tutorials were also a frequent learning method, though less common than self-teaching. Training from VR or other agencies was used for all but one type of AT, while vendor training was reported for 18 out of the 21 types of AT. Learning from another person with blindness or low vision was reported for 16 types, and training in school by a TSVI was reported for 14 types of AT. There is variability in the use of learning methods across different types of AT. For example, OCR apps and remote-sighted assistance apps were largely self-taught, whereas screen reader software had a somewhat balanced distribution of learning methods, including instruction from TSVIs, tutorials, VR or other agencies, and another person with blindness or low vision.

Table 4 shows the percentage of users who selected each method as their primary learning method for each type of AT. Self-teaching was most commonly reported as the primary method for learning to use most work AT, with the highest rates across each AT except for electronic video magnifiers and orientation/wayfinding/navigation devices. VR or other agency training was reported as the primary learning method by some participants for 19 of the 21 AT, but was only the primary learning method for most users of two AT:

orientation/wayfinding/navigation devices (42.9%) and electronic video magnifiers (33.3% - tied with TSVIs). TSVIs, tutorials, and another person with blindness or low vision were reported as the primary learning method to a lesser extent. Vendor training was not commonly utilized as the primary learning method.

Table 5 shows the self-rated skill levels and training needs for workplace AT. Users generally rated their AT skills highly, with many rating themselves above 8 on a 10-point scale. Average skill levels ranged from 9.33 ($SD=1.15$) for digital labeling apps to 7.40 ($SD=2.79$) for wearable devices. Training needs varied across AT types, with wearable device users showing the highest training need at 60%. Other types of AT with a large share of users who indicated that they would benefit from additional training include OCR software/hardware (40%), navigation/wayfinding apps (27.6%), and OCR apps (27.1%).

Table 4*Primary Learning Method for Workplace AT*

AT Type	In School (by a TSVI)	Self- Taught	VR/Agency Training	Vendor	Tutorials	Person w/ B/LV
Screen reader software (3 rd party)	21.8	36.8	18.4		10.3	11.5
OCR app		80.3	6.1		7.6	6.1
Refreshable braille display	6.1	63.3	10.2		12.2	8.2
Remote sighted assistance app		81.3		4.2	6.3	6.3
Built-in screen reader	4.8	57.1	14.3		9.5	14.3
OCR software or hardware	14.6	46.3	17.1	2.4	4.9	14.6
Digital reading software/device	13.9	63.9	2.8	2.8	16.7	
Braille notetaking device	25.0	46.9	6.3		9.4	12.5
Digital reading app	6.7	83.3	6.7		3.3	
Navigation/wayfinding app	3.6	60.7	10.7		3.6	21.4
Audio recorder app		85.0	5.0			10.0
Other identification app		64.7	5.9		5.9	17.7
Other built-in accessibility features	7.7	61.5	15.4		15.4	
Dictation/speech recognition software		61.5	7.7		15.4	15.4
Screen magnification software (3 rd party)	9.1	63.6	27.3			
Built-in screen magnification	9.1	81.8	9.1			
Orientation/wayfinding/navigation device		28.6	42.9		14.3	14.3
Handheld electronic video magnifier		50.0	33.3	16.7		
Electronic video magnifier	33.3	16.7	33.3	16.7		
Wearable device		60.0	20.0			20.0
Digital labeling app		60.0		20.0	20.0	

Note. $N=105$. The ‘Other’ method option is not shown. Rows may not sum to 100 percent. TSVI = teacher of students with visual impairments. VR = vocational rehabilitation. B/LV = blind or low vision. OCR = Optical Character Recognition.

Table 5*Self-Rated AT Skill Level & Share of Users Who Would Benefit from AT Training*

AT Type	Skill Level				Training Needed	
	<i>n</i>	<i>M</i>	<i>SD</i>	Range	<i>n</i>	%
Screen reader software	100	8.45	1.39	3-10	23	23.0
OCR app	70	8.14	2.07	1-10	19	27.1
Built-in accessibility tools ^a	58	8.17	2.00	1-10	6	10.3
OCR software/hardware	45	7.60	1.79	4-10	18	40.0
Refreshable braille display	44	8.20	1.77	3-10	10	22.7
Remote sighted assistance app	40	8.50	2.00	2-10	6	15.0
Digital reading app	37	8.95	0.91	6-10	1	2.7
Braille notetaking device	35	8.57	1.67	4-10	6	17.1
Navigation/wayfinding app	29	7.97	1.52	4-10	8	27.6
Digital reading software/device	26	8.27	2.03	1-10	5	19.2
Audio recorder app	22	8.41	1.97	2-10	2	9.1
Screen magnification software	18	7.61	2.23	2-10	4	22.2
Other identification app	14	8.93	1.44	5-10	0	0.0
Dictation/speech recognition software	12	8.92	1.00	7-10	1	8.3
Electronic video magnifier	10	8.70	2.31	4-10	2	20.0
Handheld electronic video magnifier	10	8.50	2.17	3-10	1	10.0
Other built-in accessibility features	9	8.11	1.54	5-10	2	22.2
Orientation/wayfinding/navigation device	5	9.00	1.22	7-10	1	20.0
Wearable device	5	7.40	2.79	4-10	3	60.0
Digital labeling app	3	9.33	1.15	8-10	n/a	n/a

Note. *N* = 121. OCR = Optical Character Recognition.

^a Built-in accessibility tools were primarily screen readers/magnifiers but could include dictation software.

Discussion

In our study, just over half of participants who used a screen reader or a braille notetaking device at work reported that a TSVI helped them learn to use those technologies in school. For all other ATs they used on the job, less than half, and in some cases no one, reported that a TSVI provided instruction in their use. We do not know what ATs are used in school by youth with blindness or low vision who match our sample characteristics. A recent study investigated AT use

among 51 students with blindness or low vision, but the majority of the students had low vision, followed by 22% who were legally blind and 10% who were totally blind, and more than two-thirds of the students had additional disabilities (Tuttle & Carter, 2022). That study documented the use of different AT and a smaller number of AT than found in our study, likely due to the large differences in sample characteristics (Tuttle & Carter, 2022). In contrast to our study, the students in the Tuttle and Carter study who used screen readers and refreshable braille appear to have all been provided instruction in those areas.

An OCR app was the second most commonly used workplace AT in our study, but no participants reported receiving training from a TSVI on using this AT. Very few participants reported receiving training from a TSVI on any of the mobile apps they used in the workplace. For older participants, smartphones and mobile apps would not have been available while in school or would not have been as commonly used as they are today, which could explain the lack of training. However, it is important for TSVIs to be aware of the common use of mobile apps at work today and introduce students to the wide array of apps that could be beneficial to them. Offering training to students on the most commonly used workplace apps would also be helpful, assuming they are also useful for their schoolwork.

Most participants who received training from a TSVI on their workplace AT did not consider that training to be the primary way that they learned to use the AT (with electronic video magnifiers being the exception). Self-taught was by far the most common method selected for learning to use AT, and it was also the primary learning method many people selected for their workplace AT. This finding supports the importance of TSVIs and other AT trainers preparing their students for the need to continue learning to utilize their AT and expand their skills over time. Not only are some ATs complicated, with many different features and functions, those features and functions are constantly evolving with the rapid advancements in AT for people who are blind or have low vision. Students should be informed of their need to continue learning and advancing skills with their AT. They should also be taught to problem-solve technology challenges that are likely to arise (Kamei-Hannan et al., 2023).

On average, participants rated their skill level with their workplace AT as high, with only three of the 20 AT having average skill ratings below 8 on a 10-point scale. Although most participants were very confident with their AT skills, some expressed a need for training. More than one-fifth of participants would benefit from more training on eight ATs they were currently using at work. ATs with the greatest need for training were wearable devices, OCR software/hardware, orientation/navigation/wayfinding apps, and OCR apps. OCR technology is an AT

that would typically be needed by students, and our findings suggest that more training while in school could be beneficial. Interestingly, Tuttle and Carter (2022) identified a gap in device use and instruction provided in document scanning in their study of AT use among students.

Limitations of our study should be mentioned. First, traditional limitations to data collected via surveys apply to this study (e.g., sampling bias, response bias, measurement error). Our study utilized data from two separate surveys, administered approximately one year apart, and we made some changes to our AT list between the surveys. Thus, our AT list for skill level and training needs does not match exactly to the list for learning methods. We may have underestimated the AT training needs based on how we limited who was provided the question. Finally, we anticipate that the participants in this study would have had access to a TSVI, as they were all blind or had low vision while in K-12 education in the mid-1980s or later, but we do not know the extent of services, if any, they received from a TSVI. We also do not know if the participants utilized the AT they reported using at work while attending K-12 school.

Despite these limitations, the findings from this study should be of interest to professionals who work with students who are blind or have low vision. This is the first study to investigate AT used in the workplace by young adults with blindness or low vision and to document training needs for this population. Being

aware of the AT that blind or low vision students may likely need when they enter the workforce should be valuable to the professionals who work with them to prepare them for future success.

Conflicts of Interest and Source of Funding: The authors declare that they have no conflicts of interest. The contents of this manuscript were developed under a grant from the U.S. Department of Health and Human Services, NIDILRR grant 90RTEM0007. However, these contents do not necessarily represent the policy of the Department of Health and Human Services and should not indicate endorsement by the Federal Government.

Acknowledgement: The researchers would like to thank our AT in the Workplace Study participants for taking the time to share their information and experiences with AT.

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VIDBE-Q 2025 Convention Issue



The intended purpose of the Spring 2025 convention issue is to provide manuscripts aimed at practitioners about presenter contributions to the CEC 2025 program and work related to the field of visual impairments and deafblindness. This issue will allow those who were unable to attend your session to know more about your work.

Guidelines:

- 3-5 pages
- Tables, images, and/or figures should have a text description & title (APA 7th edition)
- References
- APA formatting (7th Edition)
- 12 point, Times New Roman or Arial font
- Author information for title: Name, affiliation, highest degree earned, and email address
- Please identify target audience

Email your manuscript submission
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Deadline for submission: April 11, 2025

Professionally Crossing an Offset Intersection: My Experience of Adding a CATIS Credential to a COMS and Why You Might Consider It

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After serving as a certified orientation and mobility specialist (COMS) for 17 years, I began a new position that required the Certified Assistive Technology Instructional Specialist (CATIS) credential (ACVREP, 2024). Because there are not many COMS who have added a CATIS credential, I observed that I could add a unique encouragement to my fellow COMS to consider adding the CATIS credential. The thoughts I share are subjective and likely prompted by personal traits and experiences.

Similarities in the Fields of O&M and AT

Orientation and mobility (O&M) and Assistive Technology (AT) intersect with each other in multiple ways. For example, the long cane is itself considered AT. There are many GPS apps and devices that travelers use in their O&M. It is helpful to have AT knowledge in the use of smart phones, voice dictation, and

screen reading when using the phone to enhance O&M. Elements of O&M also apply in teaching AT. For example, the orientation component applies when teaching AT in familiarizing a student with a new electronic device's buttons and their functions. Or a student may be learning a screen reader on their phone and the AT specialist will orient them to a commonly used app placed on the bottom right corner of the screen.

For professionals who enjoy the specialization of a field like O&M, AT is also specific in scope. O&M and AT are both touched on in other service delivery fields related to learners with blindness or low vision, but each have depth to require their own certifications. They each have their own place in the nine areas of the expanded core curriculum (ECC) (Sapp & Hatlen, 2010). Furthermore, O&M and AT are mostly taught one-on-one, because the information is generally highly individualized.

In O&M and AT, I have found that a majority of students are relatively motivated to learn. This often makes teaching more effective. Furthermore, parents and teachers are often eager for their learner to acquire more skills in O&M and AT. Therefore, most of the time, everyone involved is glad that you are there!

As O&M specialists, we have the option to contract our services for learners across the lifespan. Some of us make a living by contracting and others contract on weekends or during the summer. In AT, contracting may also be done for learners

of any age as a primary source of income or on days off. With both certifications, I now have more options in what kind of services for which I contract myself.

Differences Between the Fields of O&M and AT

Although the variety of educational environments in teaching O&M can be enjoyable for many COMS, teaching AT in a single room is one less thing for which to plan. Furthermore, because AT is usually taught in one room, the teacher is generally sitting more when compared to teaching O&M. If O&M specialists are looking to transition from a more mobile field to a stationary one, AT could be considered.

There is less risk to the physical body in AT. In O&M, the COMS must teach certain things such as crossing an intersection, or the student may not have the information they need to avoid getting seriously injured. Even during an O&M lesson, the teacher cannot control traffic to avoid the small chance of, for example, a car crash impacting the lesson. However, in AT if the teacher fails to cover some aspect of a device or if a device malfunctions, there is less likelihood of physical injury. Because of this lower physical risk in teaching AT, some COMS who become trained as CATIS may find welcome relief.

In AT, sometimes educational staff hope that I am going to offer an amazing technology recommendation and make the world much easier for them and their student. Sometimes a single recommendation does this, but I do feel that pressure

sometimes and I may disappoint the teacher if I do not have that “magic pill.”

Although the “magic pill” might happen in O&M, I have found that it is a more frequent expectation in AT. However, it is quite satisfying when the “magic pill” works, such as giving a student whose vision has decreased over time their first opportunity to use an electronic magnifier so that they can read again.

Furthermore, many adults with age-related vision loss had never used AT devices or had training with them. Introducing such a device can often make a sudden positive impact on their capabilities and mental health.

In my role as a CATIS, I have to delve much more into the world of the teacher of students with visual impairments (TSVI) than I did in O&M. One of my goals as a CATIS with school-age students is to make the educational curriculum more accessible, so I must be familiar with the mode of delivery (such as whether it is in print or electronic formats). I need to have a more direct concern about the student’s reading and writing than compared to teaching O&M. However, this increased concern about reading and writing helps me as a COMS to include more elements of the ECC during O&M lessons.

As a CATIS, I have more occasions of humility compared to my work as a COMS. I should be at least at an intermediate level of knowledge on most electronic devices that a student with blindness or low vision would use. Although some devices are relatively easy to figure out, refreshable braille devices and

embossers can take hours of study, practice, and time with technical support on the phone. Yet, understanding how to use a device is a way to serve students, teachers, and parents. Although, I have found that even when I develop confidence on a device, and then I teach the student or teacher what I can, if I do not keep using it afterward, much (but probably not all) of that knowledge will drift away. When I need that knowledge later, I will have to review it again. Depending on the number of devices I learn, how often I use them, and the extent that I am in community with other AT users, my confidence with devices grows (Siu & Morash, 2014). To my fellow COMS taking on the role of a CATIS, you may have to tell yourself to be fine with not knowing everything and embrace humility as an opportunity to grow, not as something to be avoided.

Tips for the COMS Adding a CATIS

It is important to break former habits of how those of us sighted AT specialists use technology and intentionally use it as a blind user would regularly. For example, I set up a separate computer next to me that has a screen reader, and I always use that computer for getting to my “work music.” Doing this daily does not make me proficient, but it at least keeps me in regular practice. When I need to teach a screen reader, I at least have an ongoing base from which to build my skills to prepare to teach. I have heard of other CATIS’s who complete their whole daily workload on AT devices and screen readers. While pursuing the CATIS credential,

it would be a good idea to find devices to practice with. There may be a lending library, organizations, and/or individuals that can loan devices in your geographic area.

In your COMS university preparation program, you have surely had some lessons in learning at least grade one braille. Although not ideal, I rarely used it in my practice of teaching O&M. As many people know, with braille if you do not use it, you lose it. In teaching AT, the instructor should have a working understanding of contracted and uncontracted braille as many devices can only be navigated by use of braille. If your knowledge of braille is not strong, learning it at least visually will be a good way to prepare for becoming a competent CATIS. Free practitioner resources such as Braille Brain (2024) and UEB Online (2024) can be used to build skills in this area.

Renewal and Versatility

Because I had been a COMS for so long, entering the CATIS world renewed a sense of “I do not know what I am doing.” This notion could be considered encouraging for some who feel they have attained a high level of proficiency in their job and want to reenergize their career. Additionally, as a CATIS, I find myself in a profession that was formalized as recently as 2016 (ACVREP, n.d.). This means that if you become a CATIS, you have a unique opportunity to mold a profession in its younger years.

Having multiple certifications increases the teaching capacities across fields of knowledge for the professional. For example, a TSVI who is also certified as an O&M specialist can insert O&M lessons (or short O&M related encouragements) into contexts that only they can. To my fellow COMS, if you can add the CATIS credential I believe you will benefit by enlarging your knowledge base and expanding your professional influence. Your students will also benefit from your unique blend of expertise.

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What is Tactile Graphicacy?

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Graphicacy is the ability to understand and effectively use visual representations of information, such as graphs, maps, and diagrams, to communicate and make sense of information. It is linked to visual spatial abilities which are listed as the first type of intelligence as it is through the eyes that intrinsic learning begins. Just as pictures in books help sighted children develop graphicacy, tactile graphics help children who need information presented in a nonvisual modality to develop *tactile graphicacy*.

Access to tactile graphics is not enough for a blind or low vision child to develop tactile graphicacy. Mediated learning, concept development, and explicit instruction—all tools in a teacher's tool box—are required, as are access to a large variety of tactile graphics and a team approach to implementing tactile graphics in the curriculum.

This presentation will discuss the importance of both sides of tactile graphicacy—understanding and creating tactile graphics, why a team approach is needed in the development of tactile graphicacy, and preliminary findings surrounding methods to support blind and low vision learners' development of spatial abilities.

Learning Objectives

1. Participants will learn methods that support the development of spatial abilities in blind and low vision learners through the use of tactile graphics.
2. Participants will be able to identify and implement effective teaching techniques for developing tactile graphicacy skills in blind and low vision learners, enhancing their students' ability to understand and create tactile graphics.
3. Participants will be able to explain the significance of both understanding and creating tactile graphics in supporting the learning needs of blind and low vision students.
4. Participants will recognize the importance of collaboration among educators, specialists, and families in developing tactile graphicacy for blind and low vision learners.



Speaker: Erin
Foley, COMS,
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Assistive Technology for Individuals who Have Visual Impairments (ATVI): Paths and Funding at the University of Massachusetts Boston

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What is CATIS and Why is it Important?

From the beginning of the personal computing revolution, teachers of students with visual impairments recognized the potential for new computing technology to reduce barriers for their students. For the next 30 years, there was ongoing discussion across the profession of vision studies about which professionals were qualified to teach assistive technology (AT) to students who are blind or have other visual impairments (ACVREP, 2016). In 2013, the vision studies profession came to a consensus that no existing professional certification had the full scope of practice needed to meet the complex technological needs and

it was imperative that the field formalize standards for teaching students and adults who are blind or have low vision the technological skills they needed to succeed across the lifespan (ACVREP, 2016). The Academy for Certification of Vision Rehabilitation and Education Professionals (ACVREP), the certifying body in the profession of visual impairments, convened a subject matter expert committee to develop the criteria and scope of practice within the four core domains of exploration, assessment, configuration, and instruction for Certified Assistive Technology Instructional Specialists for Individuals with Visual Impairments (CATIS). The CATIS certification launched May 1st, 2016 (ACVREP, 2016).

As technological capabilities have continued to evolve quickly, and will likely continue to do so (Bhowmick & Hazarika, 2017; Kelly & Kapperman, 2018), a need persists for highly skilled AT instructors (Kelly & Kapperman, 2018). Through a recent survey by the Assistive Technology Industry Association (ATiA, 2022), it is evident that there is a high interest for flexible and affordable AT training for those in pre-professional and continuing education programs which focus on a variety of topics related to the provision of AT services for people who are blind or who have low vision.

ATVI Track at UMass Boston

The University of Massachusetts Boston (UMass Boston) was the first to offer a fully online graduate level program to prepare AT specialists who work

with people who are blind or who have low vision. Specifically, the program is designed to prepare students for certification eligibility as a CATIS through the ACVREP. Program offerings include both a Graduate Certificate in Assistive Technology for Visual Impairments (ATVI) as well as a Masters of Education in Vision Studies: ATVI.

Grant Funding at UMass Boston

We are excited to share that the Vision Studies program at UMass Boston was awarded an Office of Special Education Programs (OSEP) Grant for accepted students in our ATVI track. We are the first AT university program to be awarded a federal grant under this priority from OSEP (2023) for this specialization (84.325R)! This competitive grant support will begin with the Fall 2024 cohort. Scholars who are awarded funding from the OSEP grant will receive full tuition support. Scholars will be responsible for the cost of fees, books, and supplies. There are additional stipends available to support those who demonstrate a financial need through a separate application after being accepted into the program. This grant funding is for those who can commit to a service obligation working in the United States and associated territories, specifically with children birth through 21 who are blind or who have low vision.

The AT OSEP grant provides access to a high-quality, accessible distance education curriculum with a primary focus on the six New England states and

Puerto Rico while exploring partnerships with other states of high need. Applicants are encouraged to apply from outside the New England area. The grant support aims to increase the enrollment of underrepresented student populations and bilingual scholars from diverse undergraduate universities and Minority Serving Institutions. Our program is dedicated to ensuring that we increase the diversity of educators so that they more readily reflect the diversity of our students. We will support our diverse scholars by providing meaningful leadership and mentorship opportunities for both current students and project graduates through bimonthly culturally competent special education leadership development, opportunities for students to travel to national AT conferences, and targeted mentorship post-graduation.

Additionally, Rehabilitation Services Administration (RSA) grant funding is also available for those students who either work with or plan to work with adult populations. The RSA grant is also competitive and requires a service obligation, which must be completed within the United States working with adults or transition aged students who are blind or who have low vision in the area of AT. RSA grant funding is currently available through the end of Spring 2025 and may extend into the following summer. However, plans are to apply for the next available RSA grant once it is open for applications. Students who are awarded the RSA grant receive funding for a portion of the tuition with students responsible for

\$500.00 tuition for each course, in addition to fees, books, and supplies. Only students who are accepted into one of our programs at UMass Boston are considered for these grants, so it would first be necessary to submit a formal application.

Application Process

To start the formal graduate application process for the fall semester, applicants can create an account or login by going to the [Graduate Application](#) for the upcoming fall semester. For the ATVI track, there are options to apply for the ATVI Graduate Certificate or M.Ed. in Vision Studies (ATVI) tracks. For those pursuing CATIS certification eligibility through ACVREP, it is important to determine which program would best meet the eligibility requirements based on the applicant's experience and education.

To learn more about the program and the application requirements, it is recommended that you explore additional information through our website: [ATVI Program Information](#). The application requirements are available on the last page in the Program Brochure Fact Sheet available on this website, including a description of the statement of interest and intent, which is a requirement for each application. Applications must be submitted by June 15 each year for the upcoming fall cohort.

Other Programs at UMass Boston

The Vision Studies program offers a full spectrum of study in the area of visual impairment across the lifespan. There are M.Ed. and Graduate Certificate options in the following areas of specialization: Teacher of Students with Visual Impairment (TVI), Orientation and Mobility (O&M), and Vision Rehabilitation Therapy (VRT). Other Graduate Certificates are also available for Cortical/Cerebral Visual Impairment (CVI) and another is in process for DeafBlindness (DB). Information and links to Graduate Admissions are available on the NERCVE.org website.

If you would like to learn more about the ATVI M.Ed. and Graduate Certificate programs or other program offerings through the Vision Studies Program at UMass Boston, we have an informational webinar scheduled for January 15, 2025 at 6 p.m. Eastern and will schedule additional informational webinars in the future. Join us to learn more about our program offerings and funding opportunities. Complete this short [survey to register for a Vision Studies Informational Webinar](#).

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