What Professionals Need to Know: Highlights from the Access Technology in the Workplace Study

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NRTC NATIONAL RESEARCH & TRAINING CENTER ON BLINDNESS & LOW VISION

NIDILRR National Institute on Disability, Independent Living, and Rehabilitation Research

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Introduction

In 2020, the National Research and Training Center on Blindness and Low Vision (NRTC) at Mississippi State University began a 5-year longitudinal study to explore AT use in the workplace by people with blindness and low vision. We wanted to learn what AT were used at work, how people obtained and learned to use their AT, AT training needs, and challenges that people experienced with using AT in the workplace.

More than 360 employed people participated in at least one of the four surveys we used to collect data for this study, and 170 people participated in all four surveys. Criteria for participation were being blind or having low vision, age 21 or older, living in the U.S. or Canada, being employed, and using AT regularly on the job. An additional 102 participants who were unemployed (not currently employed but interested in working) completed a survey to allow us to compare the two groups related to AT skills and experiences.

Almost all employed participants (98.1%) used computers on the job, and 88.2% used one or more apps on a smartphone or tablet at work. Participants classified themselves as totally blind, legally blind with minimal functional vision, legally blind with some functional vision, or low vision. The majority of participants had limited or no vision. More information about the participants is available in the study's final report.

This resource provides answers to 15 questions that should be of interest to you as a professional who provides educational or employment-related services to people who are blind or have low vision. We provide a synopsis of the study results to give a simple answer to each question. We intend this document to be a quick, easy-to-understand summary of the most relevant findings from our study for vocational rehabilitation counselors and other rehabilitation professionals. More detailed information about the study results, with statistics, is available in the final report. Each question's section notes the page number in the final report where additional information can be found. Even more in-depth information is available in publications from this study. A list of project publications is available on our website's project page and in the final report.

What AT do people with some functional vision use at work?

Participants identified the AT they used at work from a list of 30 AT in Survey 4. For people with functional vision (those who identified as legally blind with some functional vision or low vision), the number of AT used on the job ranged from 1 to 28, with an **average of 5.63**. The AT used by more than 45% of this group were:

- 3rd-party screen magnification software
- Other apps on a smartphone or tablet
- Built-in screen magnification

Other apps were anything beyond the 8 blind/low vision-specific apps in the list (which included, for example, OCR+, navigation, identification, and reading apps). Handheld lens magnifiers, other built-in accessibility features on a computer or other office technology, electronic video magnifiers, and 3rd-party screen reader software were AT used by one-third or more of low vision participants. The three AT most *frequently* used at work by this group were screen magnification, built-in accessibility tools on the computer (magnification, readers, or other features), and electronic video magnifiers. Learn more in the final report, page 8.

What AT do people with limited or no vision use at work?

People who are blind (those who identified as totally blind or legally blind with minimal functional vision) used between 1 and 21 AT with an **average of 8.13**. The AT used by 60% or more of this group were:

- 3rd-party screen reader software (used by 95%)
- OCR+ apps
- Other apps on a smartphone or tablet (beyond the 8 blind/low vision-specific apps on the list)
- Remote sighted assistance app

Built-in screen readers and refreshable braille displays were used by almost half of the blind participants. The three AT most *frequently* used at work by this group were screen readers, smartphones, and OCR technology (app or computer software). Learn more in the final report, page 9.

Did the AT used at work change between 2021 and 2024?

The use of six AT increased during the study, and two decreased:

- Dictation/voice control on phone/tablet: up 9.9 percentage points (51% increase)
- Remote sighted assistance apps: up 9.4 percentage points (23% increase)
- Built-in screen readers: up 8.4 percentage points (25% increase)

- Wearable devices: up 5.9 percentage points (125% increase)
- OCR+ app: up 4.1 percentage points (7% increase)
- Built-in screen magnifiers: up 2.5 percentage points (25% increase)
- OCR software or hardware: down 6.4 percentage points (17% decrease)
- Braille notetaker: down 4.1 percentage points (16% decrease)

Even in the short period of this study, the AT used at work changed somewhat. Though a small percentage of people were using wearable devices (mostly smart glasses) at work, their use increased substantially in 2024. Technology changes quickly today, and new features and devices are regularly developed. Being aware of emerging workplace AT, as well as the AT commonly used at work, is important for education and rehabilitation professionals. Learn more in the final report, page 10.

Do workers want to use AT that they don't currently have?

Most workers indicated that they were using all of the AT they would like to use on the job. Of the 77 people (30%) who would like to have another workplace AT, 28 desired a braille device, and 10 of them specifically wanted a multi-line braille display. The other commonly desired workplace AT was smart glasses, mentioned by 19 people. Not being able to afford the AT was the most common reason given for not using it at work. Other common reasons were that their employer was not willing to purchase it and the person didn't have enough experience/skill with the AT to use it at work. Learn more in the final report, page 16.

How did people obtain their AT used at work?

Of the 11 commonly used workplace AT evaluated, employers were most likely to provide computer access technology, including 3rd-party screen reader and magnification software, and refreshable braille displays. Employers also provided OCR software/hardware for more than one-third of participants.

Governmental programs such as Vocational Rehabilitation (VR) commonly purchased workplace AT but were less likely to provide it than employers. Two exceptions to this were electronic video magnifiers (more than half were purchased by programs) and wearable devices (employers were unlikely to purchase these, and more than one-third were purchased by programs).

Most apps used at work were either free or the worker themselves purchased them; very few apps were provided by the employer or a governmental program. The only other AT that were commonly self-purchased were braille notetaking devices and wearable devices. Learn more in the final report, page 15.

Did most people get AT services from VR or other agencies, and did the services meet their needs?

Most study participants received AT services, which could include AT devices, training, or both, from government or non-profit organizations. A large majority received these services from a state VR agency, and more than one-third received AT services from an agency or organization for the blind. Only 14% of participants did not receive any AT services from an agency. Learn more in the final report, page 15.

Although most people felt that the assistance with AT they received from VR was adequate, almost 40% indicated it did not fully meet their needs. Participants who did not think the AT assistance met their needs were asked to explain their answer. Most people indicated a problem with the training they received, such as it being too little or incomplete, or that they did not receive any AT training. Some indicated that the training, or the AT received, was not individualized to their needs. A few commented on the limited knowledge of their AT trainer. Some people reported that the AT they were provided did not include all that they needed, or they received AT that was not helpful or had problems. Learn more in the final report, page 25.

Do people need training on the AT they already use at work?

Participants rated their skill level on a scale of 1 (beginner) to 10 (advanced) for each AT they used. Most rated their workplace AT skills as high or very high, with an average of approximately 8 across all workplace AT. Only a few rated their average below 5. The only individual AT with an average skill rating below 7 was wearable devices.

Despite these high AT skill ratings, many people reported that they would benefit from receiving training on the AT they currently use at work. Although few people were using wearable devices when this question was asked, more than half said they needed training to use them. More than one-third needed training on using OCR technology, and slightly less than one-third needed training on using refreshable braille devices. Computer access AT training was also needed, with one-third of screen magnification users and more than one-fourth of screen reader users indicating they would benefit from more training on their software.

Participants also reported their need for training on effectively utilizing productivity software with their AT. For all productivity software categories (i.e., word processing, spreadsheet, presentation, and video conferencing), more than half of the participants reported a need for training, with the highest percentages for presentation and spreadsheet software. Learn more in the final report, pages 18 and 19.

Where do people who are employed get AT training?

When asked where they get training on workplace AT when needed, more than 60% of participants indicated that they do not usually need training, as they learn new skills on their own. The most common source of training was arranged for or provided by the employer, but this response was significantly more common among the approximately one-third of participants who reported working for a blindness organization. Other common responses were through an AT specialist employed by VR or another agency and through the vendor who sold the AT. Almost 11% of participants reported that they need training, but they have not received it. Learn more in the final report, pages 22 and 23.

How do people prefer to learn new AT, and how did they actually learn to use workplace AT?

Participants were provided with a list of eight methods for learning to use a new AT device or software and asked to identify their top 3 preferred methods (selecting a 1st, 2nd, and 3rd option from the list). The most preferred method for learning new AT was *having someone teach me (hands-on training)*, selected as the 1st preference by almost half of the participants. Other popular methods were *reading online tutorials and/or user resources* and *reading the manual and trying it out on my own*.

To find out how participants actually learned to use their AT, they were provided a list of six potential methods, plus an "other" response option. They selected all the methods they utilized to learn how to use each of their workplace AT. If more than one method was selected, the person indicated the method they considered their primary way to learn to use the AT. For all 11 AT evaluated, a large majority of users reported that self-teaching was a method to learn their workplace AT. For all but 3rd-party screen reader software, self-teaching was considered to be the primary way they learned to use the AT. Many people never received formal training on how to use their workplace AT. Learn more in the final report, pages 20 through 23.

How are refreshable braille devices used on the job, and how important are they to those who use them?

Most participants in our study used braille technology on the job, and more than half used refreshable braille devices (a braille notetaker and/or display). Users reported that several rehabilitation professionals encouraged their use of these devices, including VR counselors, AT specialists, TVIs, and O&M instructors. Participants rated the importance of their refreshable braille devices to accomplishing their work: almost everyone rated

them as important, with close to half rating them as "essential."

Refreshable braille device users provided the three work tasks that their device was most helpful for, compared to using speech output alone. We grouped their responses into categories and the following tasks were most commonly mentioned (listed in order of times mentioned).

- Reading and comprehension (various materials, especially long documents or when attention to detail is needed)
- Proofreading and editing (including checking spelling, formatting, and numbers)
- Notetaking and organization (taking notes during meetings or calls; organizing notes and other information)
- Presenting and teaching (including facilitating meetings)
- Task management and multitasking (such as accessing information while in a meeting and accomplishing tasks efficiently)
- Data entry and processing (such as compiling information and working with spreadsheets)
- Writing and composition (creating documents, emails, visual materials)
- Coding, programming, and testing (such as creating or checking code and testing accessibility)
- Training/working with students (helping students with braille devices)

Learn more in the final report, pages 25 through 27.

What mobile apps are most useful on the job?

A large majority of participants reported using apps on their smartphone (or tablet) on the job. We asked them to identify up to three apps created for people who are blind or who have low vision that were the most useful for their jobs. The most useful types of apps identified were:

- OCR or OCR+ apps (e.g., Seeing AI, Envision AI, Voice Dream Scanner)
- Remote sighted assistance apps (e.g., Aira, Be My Eyes)
- Digital reading apps (e.g., Voice Dream Reader, BARD Mobile)
- Orientation, navigation, or wayfinding apps (e.g., BlindSquare, Good Maps)

Learn more in the final report, page 29.

Is Generative AI being used at work?

In 2024, two-thirds of our participants reported that they used Generative Artificial Intelligence (GenAI) on the job. More than half of them used blind/low vision-specific GenAI tools (like Be My AI), and more than 40% used general-use GenAI tools (like

ChatGPT). The three most commonly used GenAI tools were Be My AI, Seeing AI (Ask Seeing AI feature), and Picture Smart AI in JAWS. Many people reported using GenAI tools regularly (daily or weekly), but more used them less frequently.

About three-quarters of participants reported a positive impact that GenAI has had on their lives, with increasing access to visual information being the most common response. Many people reported positive impacts not related to visual impairment, such as easier or quicker access to information or task completion. Learn more in the final report, pages 35 through 37.

Should workers know how to use more than one kind of computer screen reader?

Most employed people who used a computer screen reader at work reported using more than one screen reader. On average, people used two different screen readers at work. JAWS was the most popular screen reader, and most people considered it their primary screen reader. Other computer screen readers commonly used were Narrator (Windows' built-in screen reader), NVDA (free 3rd-party screen reader), and VoiceOver (macOS's built-in screen reader).

People who used multiple computer screen readers were less likely to report a challenge with working efficiently compared to sighted peers. Being able to use one or more secondary screen readers allowed participants to try a different option when their primary screen reader wasn't effective or didn't work, which can be a fairly common problem with inaccessible websites and software. Our research suggests that using multiple screen readers can benefit workers in terms of efficiency and ability to troubleshoot problems experienced when using a screen reader. A finding of note is that women were less likely to use multiple screen readers than men. Learn more in the final report, page 11.

What challenges do people experience with AT in the workplace?

We provided a list of 15 challenges to participants, and asked them to select all challenges they experienced in the past year at work. The most common challenges experienced by participants were related to inaccessible or difficult-to-use digital content, including documents, websites, software, and images. These challenges topped the list in all three years the question was asked (2022 through 2024).

When considering challenges by vision level, these inaccessibility challenges were commonly reported by both groups. However, more people with low vision reported the challenges of *reading printed material* and *reading handwriting*. *Formatting or*

managing the layout of documents was particularly a problem for people who were blind, and more than half of both groups reported *working efficiently (compared to sighted peers)* as a challenge.

We evaluated changes in the challenges reported between 2022 and 2024, and found that two challenges exhibited a consistent pattern of increase or decrease: *reading handwriting* decreased (8.2 percentage points), and *formatting or managing the layout of documents* increased (9.2 percentage points). Learn more in the final report, pages 40 through 43.

How did unemployed people differ from employed people in terms of AT?

We used the data from the 102 unemployed participants in this study to evaluate differences between them and our employed participants related to AT. We focused comparisons on skill level, AT self-efficacy, training needs, and how AT was obtained.

When comparing self-reported skill level for individual ATs, there were only a few differences between the groups, with unemployed people reporting significantly lower skill levels with four AT: built-in accessibility features on a computer (e.g., screen reader or screen magnification), screen reader software for a computer, braille labeling system, and digital labeling apps. When averaging each person's skill level based on all the AT they used, employed people had significantly higher average self-rated AT skills than unemployed people: 7.93 versus 7.56. There was only a small, insignificant difference between the groups on AT self-efficacy, with both groups having relatively high AT self-efficacy.

There were several differences between the groups in terms of training needs. Unemployed participants were significantly more likely to report needing training for 6 of the 27 AT compared, and 10% or more of the unemployed participants (compared to employed participants) indicated a need for training for 6 additional AT.

We evaluated differences in how AT was obtained for 11 AT. Unemployed participants were more likely to obtain most of the AT through a governmental organization such as VR than employed participants were. Unemployed participants were more likely to purchase themselves or use free screen reader software than employed participants, as a majority of employed participants obtained their screen reader software through their employer. Learn more in the final report, pages 51 through 53.

Key Takeaways and Recommendations

- For people who are blind or have low vision, the importance of having AT tools and the skills to use them cannot be overstated for success in today's workforce. For most people, many AT tools are utilized at work.
- A thorough AT assessment and development of an individualized plan for AT instruction are essential to ensure that the AT services provided by your agency are what the person really needs.
- Most people who want to work need at a minimum proficiency in computer access software/tools, the ability to efficiently utilize apps on a smartphone, and OCR technology or skills with an electronic video magnifier, depending on their vision level. Other AT will likely be needed, depending on the work tasks required for the job.
- Strong screen reader skills are important for blind employees and job seekers. To improve efficiency at work, screen reader users should have the opportunity and be encouraged to learn how to use more than one screen reader. Because women were less likely than men to use multiple screen readers at work, women may particularly need encouragement to learn to use more than one screen reader.
- People want to receive hands-on training to learn AT, but many don't and rely on self-teaching. A good portion of people would benefit from training on some AT they are currently using at work. If your agency can provide AT training to former consumers in the future, let them know how to apply for this while you're still working with them.
- Ensure that your consumers have the opportunity to receive AT training, if needed. Advocate for this if you have to; it is unlikely that most consumers can be successful in the workplace without it.
- The desire and perceived need for training on using computer access software is particularly important given the widespread and frequent use of this software on the job. Receiving adequate training on the appropriate computer access AT is essential for your consumers.
- Advocate for training on other workplace AT that is often not provided by agencies, such as smartphone skills and the use of OCR+ apps.
- Although obtaining AT training through VR is essential and you should advocate for all consumers to receive it, it is also important to let consumers know that the AT training they receive from your agency will only be a starting point. They will need to continue to learn on their own, particularly for complicated AT such as screen readers. If they can develop a continuous learning mindset related to AT, they will have a better chance of being successful.
- Not everyone can easily learn new AT, and getting AT training while employed can

be challenging. A few participants had employers who provided training, but most did not. Does, or can, your agency provide such training opportunities?

- Clearly, braille is important at work for people of all ages, with many users considering their refreshable braille devices to be essential to accomplishing their work. Consumers and students should be given the opportunity to learn to use and own refreshable braille devices. You can provide encouragement for this as well as advocate for it! Refreshable braille devices may be particularly important for certain jobs/fields and can improve work efficiency, which was a concern for many participants.
- It is also important for consumers to have the opportunity to learn braille and adopt refreshable braille devices at any age. Your encouragement and support in this area can make a big difference.
- Keep up to date on AT. Things change quickly, and the more awareness and knowledge you have, the better assistance and guidance you can provide to your consumers.
- Wearable devices, particularly smart glasses, are an emerging technology that many users have found helpful to their jobs and that others would like to adopt. They appear to be a viable workplace AT which VR may consider purchasing, if the consumer's work tasks align with their use.

Learn More or Get Help

Additional results from our AT in the Workplace Study findings are available in the final report. We also have multiple publications that provide more in-depth findings on specific topics; a list is available on the project page of our website with a link to each publication.

Have questions about these findings or want to talk to someone about implementing these recommendations? Contact the NRTC at nrtc@colled.msstate.edu or visit the technical assistance page on our website.

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