Workforce Development and Accessible Materials and Technologies: Synthesis of Knowledge Development Findings

By AEM Center at CAST

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Background on the Development of the AEM Quality Indicators for Workforce Development Programs

The National Center on Accessible Educational Materials for Learning (National AEM Center) at CAST is a technical assistance (TA) center funded by the U.S. Department of Education, Office of Special Education Programs (OSEP). The purpose of the Center is to improve educational and employment opportunities for individuals with disabilities through TA activities that increase both the availability and the use of accessible materials and technologies. The Center’s stakeholders serve and advocate for individuals with disabilities and their families across the continuum of educational settings: early learning, K–12, and postsecondary academic and career training programs.

CAST has a rich history of providing AEM-related TA services, particularly to state leadership teams seeking to improve statewide systems for providing accessible materials and technologies to all students who need them. Since 2007, CAST TA specialists have provided intensive TA to leadership teams in 27 States. Central to this TA has been the continuous improvement of the Center’s Quality Indicators with Critical Components, which point to evidence-based practices for creating and sustaining coordinated systems for providing and using accessible materials and technologies.

In partnership with 15 states between 2007 and 2014, CAST codeveloped and supported the implementation of version 1.0 of the Quality Indicators with Critical Components for the Provision of Accessible Instructional Materials (AIM). Based on evidence behind the Quality Indicators for Assistive Technology (QIAT), these indicators were designed specifically for K–12 systems and were limited to best practices for providing accessible formats of print materials. In 2016-2017, CAST revised the Critical Components for K–12 to version 2.0 by adding considerations for the provision of accessible digital materials (at this time, the acronym “AIM” had been updated to “AEM” per OSEP).

Parallel to the K–12 revision, first version Critical Components for Higher Education and Critical Components for Workforce Development were codeveloped with field experts and released in 2018 and 2019, respectively. When an opportunity arose in 2020 to further advance the development of the AEM Center’s Quality Indicators, including the addition of Critical Components for early childhood programs, our team formalized knowledge development activities. For workforce development, we conducted a series of interviews with experts in agencies, organizations, and institutions with knowledge and experience in program accessibility and career training. Additionally, a literature and federal policy review was conducted to highlight areas of specific relevance to the
provision of accessible materials and technologies in workforce development settings. Knowledge gained from these activities is reflected in version 2.0 of the Critical Components for Providing Accessible Materials and Technologies for Workforce Development Programs.

Today, the National AEM Center’s Quality Indicators provide practitioners, administrators, researchers, policymakers, and parents/caregivers with actionable steps toward increasing the availability and use of accessible materials and technologies from early learning through postsecondary education and workforce development.

**Goals of the Center's Workforce Program Knowledge Development**

The goals of the National AEM Center’s knowledge development activities in workforce development programs were to: 1) better understand the workforce development program landscape as it relates to the provision and use of materials and technologies for youth transitioning from K–12 to postsecondary or directly to the workforce and, on that basis, 2) revise version 1.0 of the Center’s Quality Indicators with Critical Components for the Provision of AEM and Accessible Technologies in Workforce Development Programs (QIs).

Although the principles of evidence-based practices related to the use of AEM and accessible technologies apply to career training, provision for career seekers with disabilities in these settings is complicated by the nature of the workforce development system. For example, students with disabilities transition to a range of postsecondary programs, including two- and four-year colleges, career training programs (e.g., pre-apprenticeships and apprenticeships), and directly to employment or to seeking employment. Understanding the workforce development landscape is essential to appropriately contextualize the QIs with critical components in each of these settings. To that end, the focus of our knowledge development was on transitioning youth in Career and Technical Education (CTE) and within programs offered through the Workforce Innovation Opportunity Act (WIOA).

**Knowledge Development Activities**

In this section, we describe our knowledge development activities, particularly with respect to CTE and WIOA-funded programs. Knowledge development activities included a literature and policy review, insights gained from previous CAST projects, interviews, and a focus group of subject matter experts.
Throughout these activities, we stayed alert to facts, comments, practices, and recommendations that provide insights into how the seven AEM Quality Indicators can apply in workforce development programs:

1. A coordinated system for providing accessible materials and technologies
2. Provision in a timely manner
3. Written guidelines
4. Learning opportunities and technical assistance
5. Data collection
6. Data use
7. Allocation of resources

**Literature review**

We conducted a literature review to inform our understanding of the workforce development landscape, particularly with respect to the current conditions for career seekers who need accessible materials and technologies in

1. CTE in both K–12 and postsecondary education
2. Programs directed to transition age youth with disabilities that are funded through the WIOA

**Career and Technical Education**

Career and Technical Education offers an ideal publicly funded, educational structure through which students are introduced to and develop skills in emerging fields. Designed to purposefully link students to work-based learning opportunities and postsecondary credentials, more than eight million secondary students and four million postsecondary students are already participating in innovative CTE programs across the United States (PCRN, 2020).

The unanimous bipartisan passage of **H.R.2353, “The Strengthening Career and Technical Education for the 21st Century Act” (Perkins V)** in 2018 made it clear that the United States believes CTE can uniquely meet the demands of today’s economy and is committed to ensuring that CTE is available to all students. Not only did Perkins V significantly increase spending on CTE programs and initiatives, but it also focused funding on at risk “special populations,” including students with disabilities. Today, states and school districts are required to spend funds on recruiting, retaining, and supporting students that have traditionally experienced significant barriers. For example, school districts can use their Perkins funds to eliminate out-of-pocket expenses for
special populations, such as the cost of dual enrollment programs, childcare, and transportation.

Perkins V also includes new accountability provisions that require states and school districts to “continuously make meaningful progress toward improving the performance” of all CTE students, including those defined under special populations. During reporting, states must identify disparities without gaps in performance levels between special populations, as well as racial and ethnic subgroups, and must create quantifiable descriptions of progress being made to address these gaps.

Recently, the National Alliance for Partnerships in Equity conducted a root cause analysis - a literature review of barriers that students with disabilities encounter in trying to access high quality CTE. Amongst the variables identified was a need to educate transition staff, such as teachers and career counselors, about accommodations that people with disabilities need in the workplace so that they can prepare students and the workforce to meet these needs. Educators also need to procure accessible assessment tools and understand what accessible materials and technologies will be needed in the workplace (Burbank & Tilson, 2019).

**Workforce Innovation Opportunity Act**

The US Department of Labor and the US Department of Education are charged with ensuring equal access to transition from secondary to postsecondary education and employment for individuals with disabilities who may require accessible materials and technologies. Both agencies create legislation, issue guidance and provide funding to structure the workforce development system and monitor adherence to the WIOA, which became law in 2014.

In late 2016, the Department of Labor published a final rule revising the regulations implementing the nondiscrimination and equal opportunity provisions of Section 188 of WIOA. It is under Section 188 that the provision of accessible materials and technologies for job seekers and employees who need them is required. The Section 188 final rule also provided the following definition of programmatic accessibility:

> Access to full range of services regardless of disability (e.g., consulting with disability stakeholder groups about how to improve outreach to customers with disabilities).

Core programs funded under WIOA have begun to address programmatic accessibility.
Pre-employment Services for Youth with Disabilities
The Rehabilitation Act of 1973, as amended by WIOA, places emphasis on services for students and youth with disabilities to ensure they have the training necessary to access competitive integrated employment. The amendments expand the population of youth with disabilities served through Vocational Rehabilitation (VR), as well as the types of services that can be provided to prepare students and youth with disabilities for transition to postsecondary education and employment. As part of this effort, WIOA directs 15% of Federal VR funding to pre-employment transition services for students with disabilities. Pre-employment transition services are to be made available to all students with disabilities whether or not they have applied for and deemed eligible for VR services. Required pre-employment activities are job exploration counseling, work-based learning experiences, college and career counseling, workplace readiness training, and instruction in self-advocacy. All of these services need to be made programmatically accessible, meaning that students and youth with disabilities must have access to a full range of services regardless of disability (Section 188 Final Rule). Accessible materials and technologies are foundational to programmatic accessibility.

Transition coordinators, families, and students and youth with disabilities need technical assistance to assess the need for and ensure the provision of accessible materials and technologies across a range of activities: developing IEP and transition plans; working with local workforce development boards, One Stop Career Centers, and employers to develop employment opportunities for students with disabilities; and working with schools to ensure that all pre-employment transition services are accessible. Additionally, system level considerations are needed so that state VR and education agencies coordinate the coverage of the costs of accessible materials and technologies within pre-employment transition services (see Rehabilitation Services Administration guidance).

Workforce Investment Boards – American Job Centers
Local Workforce Investment Boards (LWIB) direct federal, state, and local funding to workforce development programs and oversee the American Job Centers (AJC) (comprehensive employment services for job seekers). In a survey of LWIB executive directors (i.e., those responsible for implementing WIOA) commissioned by the Department of Labor (DOL) and conducted by Abt Associates, 14% of the youth served by LWIBs are recorded as having disclosed a disability. LWIB executive directors estimate that an additional 18% of all youth served have a disability that remains undisclosed. The same survey found that obtaining necessary assistive or specialized technology was cited as a barrier by 15% of LWIB executive directors and as a very significant barrier by 13%. Fulfilling program accessibility requirements was cited as a barrier for 6% and a significant barrier for 5% (Speanburg et al., 2013).
More than 3,000 AJCs, also known as One Stop Career Centers, are funded and overseen by DOL. AJC services include information on the labor market and job openings, job search assistance, career advising, and support for education and training, including basic skills and occupational training for a subset of clients that cannot obtain a job with less intensive support (Van Noy, 2015). All AJCs are required to provide physical, communication, and programmatic accessibility in employment and training services for individuals with disabilities, including accessible materials and technologies.

A 2016 DOL evaluation of the accessibility of AJCs found that most were fully physically accessible (92%), and the majority had accessible communications (70%) (US DOL, 2016). Less than half, however, were fully programmatically accessible (44%) (i.e., they provided access for job seekers with disabilities to the full range of services offered). Examples of programmatic accessibility included staff asking all customers if they needed accommodations and consulting with disability stakeholder groups about how to improve outreach to customers with disabilities. Exemplary items included having people with disabilities serve as advisors regarding AJCs’ operations. Annual assessment of physical and programmatic accessibility of AJCs is now required by federal statute (US DOL, 2015).

To better coordinate services for job seekers with multiple barriers to employment, the DOL’s Education and Training Administration (ETA) piloted the Integrated Resource Team (IRT) strategy within the Disability Employment Initiative (DEI). IRTs function as informal supports with representatives ranging from VR, mental health, workforce agencies, supported employment specialists, and other relevant advocates. In a study conducted by the National Disability Institute (NDI), implementation of IRT yielded increased rates of employment for individuals in comparison to a control group. Job seekers that used an IRT also had higher rates of intensive employment services, and had higher retention rates in workforce training programs and comparable wages to job seekers that did not use an IRT (NDI, 2015).

National Pre-apprenticeship and Apprenticeship Programs
It is estimated that the COVID-19 pandemic could lead to almost one quarter of teens and young adults disconnected from both work and school (Lewis, 2020). These disconnected young people are more than three times as likely to have a disability as those young people that are connected to school or work (Burd-Sharps & Lewis, 2018). WIOA directs 75% of its youth funds to these out of school youth, including grant funding to the YouthBuild and Job Corps programs. YouthBuild and Job Corps are two national pre-apprenticeship programs that serve as critical mechanisms to change the trajectory for young people at risk of not completing high school and not transitioning to
further education and work. A [2016 Final Rule on apprenticeships](#) added disability as a basis for nondiscrimination in apprenticeships:

> Current rules have long provided that employers cannot discriminate on the basis of race, color, religion, national origin and sex. The final rule extends protection from discrimination in Registered Apprenticeship to individuals with disabilities, which reflects the current state of Equal Employment Opportunity law. This protection includes the obligation to provide reasonable accommodations to apprentices with disabilities.

Job Corps serves more than 50,000 young people each year through 100 centers. Job Corps provides room and board for eligible low-income young people while they learn a skilled trade, receive career counseling, or work toward completing their high school education. A program can last up to two years and participants receive a monthly stipend. Job Corps offers a number of [resources to support participants who need assistive technology (AT)](#) related to accessible materials and technologies.

YouthBuild is a recognized pre-apprenticeship program model that focuses on connecting youth to paid apprenticeship pathways in their chosen fields. Each year, approximately 10,000 low-income young people enroll fulltime in YouthBuild programs for an average of 10 months. Learners spend at least 50 percent of their time in academic settings preparing for college and careers and at least 40 percent of their time participating in hands-on job training. Learners spend their remaining time in service and leadership development activities. YouthBuild USA is the national intermediary for a network of more than 250 community based YouthBuild programs and schools. Local programs and schools help low-income young people, ages 16–24 who have left school without a diploma, earn their High School Equivalency or high school diploma, learn job and leadership skills, prepare for postsecondary and career success, and become leaders in their communities. Eleven percent of young people enrolled in YouthBuild have disclosed a disability, indicating a significant need for the provision of accessible materials and technologies in these programs ([Miller et al., 2016](#)).

### Accessibility in Career Training: CAST’s E-portfolios

As part of our knowledge development activities, the AEM Center team took advantage of the opportunity to learn from recent CAST projects that have advanced the development and use of e-portfolios in career training programs. With funding from the National Science Foundation (NSF), CAST worked with multiple YouthBuild program sites across five New England states to research and codesign a personalized and portable e-portfolio software, now known as STEMFolio.
Few e-portfolios are designed with accessibility in mind. STEMFolio, in contrast, is accessible and universally designed. Functionality includes text-to-speech, speech-to-text, and translation. Users are prompted to provide alt text for images and to add captions and transcripts when adding content to the fully accessible video player. Designed to be robust, STEMFolio is mobile-first and optimized for use across browsers and devices. Furthermore, it can be used within the context of a range of workforce development programs to support youth and adult learners engaged in work-based learning and training on the job. For example, content can be changed, as well as the look and feel of the interface. And the tool can be used where there is a need to support documentation of industry relevant skills and knowledge.

Leveraging its capacity for customization, this e-portfolio software was used in the Apprenticeship Inclusion Models grant project sponsored by the Office of Disability Employment Policy (ODEP). CAST partnered with Jobs for the Future and the Wisconsin Regional Training Partnership to expand career pathways for people with disabilities in the Industrial Manufacturing Technician (IMT) Registered Apprenticeship Program. The goal of the pilot project was to address the challenge of assessing readiness for the IMT apprenticeship pathway and to help potential apprentices have their own personalized portfolio that documents prior learning in IMT competencies.

The project used a customized version of CAST’s accessible e-portfolio software, named IMTFolio. Equipped with an event log, IMTFolio captures and records a variety of actions taken by users within the application. By analyzing the event log, one can better understand how users completed tasks within the tool, including how often each action was undertaken, how long each action took, and whether an action was completed. Pre-apprentices used this technology while in short employer-driven pre-apprenticeship programs (three to four weeks) during 2019–2020. An IMTFolio usage analysis conducted by CAST during this time found that every active user made use of the application’s accessibility toolbar. All learners tried out the application’s ability to read text aloud at least one time. Some learners utilized this feature very frequently, with one learner using the text-to-speech function 45 times.

**Interviews with Workforce Development Experts**

The goal of the knowledge development interviews was to gather information about the ways in which accessible materials and technologies are provided and used in service delivery for workforce development and career training programs. We conducted interviews with the following national TA providers and representatives of nonprofit and social policy research organizations:
Findings from Interviews

Interviewees expressed that while work is being done to improve physical access at AJCs, there is inconsistency in programmatic accessibility across these centers, which reflects the findings of the DOL’s 2017 internal evaluation. An example given was that VR referrals are commonly made (“cold handoffs”) rather than “warm handoffs” or coordination between VR and AJC, which would better support job seekers with disabilities. We were informed that programmatic accessibility is best in states where VR, workforce development, and education departments are housed within the same agency. We also discussed the hiring process within the context of AEM: Accommodations and accessibility are inconsistently supported in job application processes, and often pre-employment testing mechanisms are inaccessible. To address this issue, the Job Accommodation Network (JAN) is developing tools to increase coordination between HR and IT departments in support of improved accessibility in online job applications and related procedures that require the use of digital materials.

We heard that the provision of accessible materials and technologies in a timely manner is challenging. While it might be available eventually, AT and AEM are not consistently provided at the time needed for trainees or employees with disabilities. Additionally, timeliness is contingent on coordination across agencies—when referrals, or “cold handoffs,” are made from one agency to another, timeliness of AT and AEM is decreased as job seekers navigate from one organization or service agency to another.

Our conversations with experts in the field confirmed that AEM resources would be of use to local Equal Employment Opportunity offices and LWIBs. The National Disability Institute (NDI) has developed resources to foster Communities of Practice for VR agencies at state level, and DeafTEC has created Working Together modules to support deaf and hearing persons to communicate effectively in the workplace. As mentioned above, JAN developed a Workplace Accommodation Toolkit, a self-paced guide identifying 15 points of accessibility in job application processes to support
coordination and timeliness of the provision of accessible materials and technologies for job seekers.

**Focus Group on the Draft of Version 2.0 Critical Components for the Provision of AEM in Workforce Development Programs**

In October of 2020, AEM Center staff convened a virtual focus group of workforce development experts to provide feedback on a first draft of the revised Critical Components for the Provision of AEM in Workforce Development Programs. Members of the focus group included some of the same experts who served roles in the knowledge development activities (Donna Lange and Caleb van Docto), as well as Kim Phinney, Senior Fellow, Center for Rural Strategies; Sarah Loizeaux, Technical Assistance Liaison, Disability Employment Initiative, WINTAC, National Disability Institute; and Leela Hebbar, Senior Associate, Social Policy Research Associates.

These experts offered both challenges and opportunities in the implementation of the Quality Indicators by workforce development and career training agencies.

**Challenges**

The panelists highlighted that out-of-school young people constitute approximately 75% of WIOA Title I youth formula funding. Common reasons that young people who need them do not receive accessible materials and technologies were offered, such as: they were never assessed for a disability; costs of assessments are high and not readily available; and a young person may not know that services carry over from K–12 to postsecondary and workforce training. It was noted that staff in local youth serving agencies are not trained to conduct assessments related to disability identification or needs, nor are they skilled at teaching students with disabilities or procuring accessible materials or technologies. Staff may also not know where to access assessments to see if a young person with a disability qualifies for an accommodation. One of our experts summarized the challenge well:

> One of the challenges with WIBs and the workforce training world is a lack of understanding of the definition of disability and need for accessibility. So young people with learning differences are generally overlooked. So the value of, types of resources for accessible materials/AT doesn't even reach consciousness from fed-region-state to local programs. Second to that is then how to use and implement accessible materials and AT.
Panelists further illustrated the complexities related to assessment by pointing out that WIOA Title I is the funding that flows to dislocated youth programs such as YouthBuild and Job Corps. WIOA, however, integrates adult education, VR, and rehabilitation services. VR is the only area where assessments are regularly offered and conducted, so most programs serving out of school youth require self-disclosure of a disability to leverage other resources to support accessibility needs. Compounding these issues is the fact that most programs that serve out-of-school youth are short term (e.g., 6-9 months) and young people in these programs are reluctant to engage in assessment. Other challenges include rural areas that are far from workforce development programs, such as AJCs, or youth programs, such as YouthBuild. And web-based services exacerbate the challenges around accessibility, including online unemployment services that are inaccessible.

**Opportunities**

The focus group discussion pointed out that a potential leverage point in this space is that LWIBs are required to spend funds on out-of-school youth. This includes identifying and serving those with disabilities in order to be in compliance with WIOA regulations. There is a good deal of variation from one state to the next and between the state and local levels. Despite that, best practices exist in many states, such as California’s Hallmarks of Excellence AJCC Certification.

The panelists cautioned that the degree of coordination between state and local agencies varies among states. States with a single State Workforce Board (e.g., New Hampshire, Vermont, Utah, Georgia and Idaho) may be good places to disseminate information about the AEM Quality Indicators. There are also youth-serving AJCs that are more receptive to supporting transition services for youth with disabilities.

Panelists suggested that a potential area for focus is where WIOA Titles 1, 2 and 3 services are closely coordinated. This arrangement brings together youth services, adult services and VR, and VR is where the knowledge about accessibility is most likely to reside. For example, while most money exists under Title 1, Title 3 (Wagner-Peyser) operates under the same department in an AJC (funds that are used to maintain computers). If a person with a disability enters a One Stop Career Center (i.e., an AJC) and needs a technology-related accommodation (e.g., screen reading software or magnification), this would be funded under Title 3 and available to anyone connected to Title 1.

Another opportunity identified was to add accessibility data collection into existing data collection structures. For example, workforce development agencies collect data on each individual client in a Participant Individual Record Layout (PIRL), including
information on disability. Social Policy Research Associates maintains the PIRL data collection for DOL. Data are available through DRIVE: Data Resources to Inspire a Vision of Employment on the LEAD Center website.

**Final Thoughts on the Process of Knowledge Development**

The National AEM Center’s use of knowledge development was clearly effective at meeting the purpose of informing the process of creating the critical components for providing and using AEM in workforce development programs. Beyond that, the Center established partnerships and an extended network of early experts that will continue to support the evolution of the critical components over the course of the four years of the project.

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