

Higher Education and Accessible Materials and Technologies: Synthesis of Knowledge Development Findings

By AEM Center at CAST

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Table of Contents

Background on the Development of the AEM Quality Indicators for Workforce Development Programs.....	2
Goals of the Center’s Higher Education Knowledge Development	3
Knowledge Development Activities	4
Literature review	4
Interviews with Higher Education Experts.....	7
Focus Group on the Draft of Version 2.0 Critical Components for the Provision of AEM in Higher Education.....	9
Final Thoughts on the Process of Knowledge Development.....	10
References.....	11

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 twenty-seven 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 fifteen 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 higher education, we conducted a series of interviews with experts in colleges, universities, and related associations with knowledge and experience in system- or campus-wide accessibility. Additionally, a literature and federal policy review was conducted to highlight areas of specific relevance to the provision of accessible materials and technologies in higher education settings. Knowledge gained from these activities is reflected in version 2.0 of the [Critical Components for Providing Accessible Materials and Technologies for Higher Education Institutions](#).

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 Higher Education Knowledge Development

The goals of the National AEM Center’s knowledge development activities in higher education were to: 1) better understand the higher education landscape as it relates to the provision and use of materials and technologies for college and university students 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 Higher Education (QIs).

The Center's previous activities related to the development of version 1.0 of the Quality Indicators, as well as experience with providing TA to higher ed stakeholders, prepared our team for meeting those goals. Our knowledge development activities were designed to build upon and strengthen an existing foundation of best practices.

Knowledge Development Activities

In this section, we describe the knowledge development activities, including a literature and policy review, interviews, and a focus group of subject matter experts. During this process, we looked for diverse perspectives and firsthand knowledge of the AEM systems in place on campuses and how the seven quality indicators below could be revised or expanded to better support those systems.

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 higher ed settings:

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

Multiple indicators show a positive trend in the number of students with disabilities enrolling in higher education programs:

- Between 1995 and 2015, the number of undergraduate students reporting a disability more than tripled, from 6% to 19% ([NCES, 1997](#); [NCES, 2019a](#)).
- Between 2008 and 2015, the percentage of public four-year institutions reporting that at least three percent of students were registered for disability services increased by twelve percentage points, from 23.3% to 35.3% ([NCES IPEDS 2008–2015](#)).

- Between 2008 and 2018, the percentage of working-age people with disabilities with a bachelor's degree or more increased by almost three percentage points, from 12.3% to 15.2% ([Erickson et al., 2020](#); [Erickson et al., 2010](#)).

Despite the increase in attendance of students with disabilities in undergraduate programs, disparities in outcomes persist:

- Compared with the total number of students enrolled in public four-year institutions, students with disabilities are less likely to be enrolled full time for a full year at one institution and are less likely to complete their programs ([NCES, 2019b](#)).
- Of all recent science, engineering, and health bachelor's degree recipients, 22% of those with disabilities are not employed, compared with 6% of those without disabilities ([NSF, 2019 Table 9-13](#)).
- Of all doctorate degree recipients, only 7% have a disability ([NSF, 2019 Table 7-6](#)).
- An estimated 15.2% of noninstitutionalized persons aged 21 to 64 years with a disability has a bachelor's degree or higher, compared with approximately 35% of those without disabilities ([Erickson et al., 2020](#)).

Combined, the above data indicate that institutions of higher education (IHEs) need to do more to retain the increasing number of students with disabilities coming to their campuses and online programs, and to better prepare them for employment or to continue their academic career.

The 2019 EDUCAUSE Center for Analysis and Research (ECAR) Study of Undergraduate Students and Information Technology underscores the finding that technology support for students with disabilities needs improvement. In a query on student perspectives of institutional awareness of accessible technology needs, 21% of students with disabilities rated their institutional support as poor or fair. Furthermore, 11% of students with disabilities reported that their institution was not aware at all of their need for accessible technology ([Gierdowski, 2019](#)).

The U.S. Department of Education (DOE) and the U.S. Department of Justice (DOJ) have identified the consistent provision and use of accessible materials and technologies for students with disabilities as a legal obligation of IHEs. In 2010, a [joint Dear Colleague Letter \(DCL\) to college and university presidents](#) established that “emerging technologies must be in compliance with civil rights laws prohibiting discrimination on the basis of disability.” The 2010 DCL was written in response to a complaint regarding the use of an electronic book reader (the Kindle DX) that was not accessible to students with vision impairments. The DCL stated that requiring the use of

an emerging technology in the classroom that is inaccessible to students with disabilities constitutes discrimination under the Americans with Disabilities Act (ADA) and under Section 504 of the Rehabilitation Act, unless these students are provided with accommodations or modifications that enable them to receive all the educational benefits afforded by the technology in an equally effective and equally integrated manner. According to the DCL, students with disabilities must be able to acquire the same information, engage in the same interactions, and enjoy the same services as students without disabilities with substantially equivalent ease of use.

The past decade has seen several high-profile legal cases related to inaccessible course content and technology (a sample list is provided on CAST's website, [UDL on Campus](#)). In 2015, edX, an online learning platform cofounded by Harvard and MIT, settled a case brought by the DOJ; the outcome required edX to comply with minimal accessibility standards (level AA of the Web Content Accessibility Guidelines) across all mobile, web, and Learning Management System (LMS) platforms ([Adler, 2015](#)). According to a DOJ press release at the time, edX was required to “provide accurate captioning for the deaf, oral navigation signals for the blind, and programming changes so those with dexterity disabilities can navigate content without struggling with a hand-operated mouse,” among other stipulations.

Also in 2015, the National Association of the Deaf (NAD) filed separate lawsuits against Harvard and MIT, alleging that the universities failed to provide consistent and accurate captioning for courses offered through edX and other online content. By early 2020, both Harvard and MIT had settled the cases through consent decrees ([Kim, 2019](#); [McElaney, 2020](#)). “The [Harvard] settlement represents the most comprehensive set of online accessibility requirements in higher education and ensures for the first time that Harvard will provide high-quality captioning services for online content” ([Kim, 2019](#)). The consent decrees associated with the edX cases clarify for all IHEs that accessibility compliance applies to both the online course content (e.g., digital books, websites, and video) and the technology (e.g., digital players and LMSs) provided to students.

Atlantic Cape Community College responded to its own [2015 consent decree](#) by deciding to make accessibility part of the culture of the institution. The college's accessibility policy and related procedures were rewritten with the engagement of broad campus leadership, including the Board of Trustees, the president, and deans. The Center for Accessibility (previously known as the Office of Disability Support Services) and the instructional technology department jointly offer a range of workshops that train faculty to create accessible content and to select accessible products. An outcome of the training has been the cultivation of faculty accessibility champions, something seen on other campuses (see [Lieberman, 2018](#)). Students with disabilities attending Atlantic

Cape reportedly have felt tangible improvements to their accommodations, and school officials report an increase in students with disclosed disabilities enrolling in the school ([McKenzie, 2019](#)).

Reports indicate that the abrupt shift to emergency online learning in the spring of 2020 created new challenges for students with disabilities. According to the results of a survey of colleges conducted by the Landmark College Institute for Research and Training, more than two-thirds of respondents reported an increase in the number of students applying for academic accommodations during the spring 2020 semester. Additionally, 67% of institutions reported reconsidering the accommodations of students already registered with disability services. These data suggest that the conditions of online learning gave rise to a new set of obstacles for students with disabilities. An encouraging survey result was that 77% of accessibility offices reported greater collaboration with faculty ([Koenig, 2020a](#)).

The importance of collaboration to achieve digital accessibility during the pandemic was also cited in an interview of representatives from Southern Illinois University at Edwardsville and the University of Delaware ([Koenig, 2020b](#)). Both universities coordinated across IT, instructional design, and accessibility/disability services to support faculty in making online courses accessible to students with disabilities. And, with a grass roots initiative that began years before the pandemic, the development of an “accessibility community” at the University of California, made up of personnel in wide-ranging roles across all ten campuses, is credited with the system’s [accessible procurement guidelines](#) ([Tevis, 2019](#)).

Interviews with Higher Education 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 higher education. We conducted interviews with the following leaders in higher education accessibility for students with disabilities:

- Stephan Smith, Executive Director, AHEAD
- Kristie Orr, President, AHEAD; Director, Disability Services, Texas A&M
- Mark A. Greenfield, Web Accessibility Officer, Office of Equity, Diversity and Inclusion, SUNY–Buffalo
- Malcolm Brown, Director, EDUCAUSE Learning Initiative, EDUCAUSE
- Donna Lange, Associate Professor, Principal Investigator and Center Director, DeafTEC, National Science Foundation National Center of Excellence, National Technical Institute for the Deaf, Rochester Institute of Technology

All interviewees reported a steady shift in higher education's perspective on accessibility for students with disabilities. Once driven solely by compliance, universities are beginning to adopt accessibility as a matter of equity. Disability services offices once had sole responsibility for addressing the needs of students with disabilities. Over the past decade, the roles of IT departments, procurement offices, and faculty have been increasing; partly in reaction to the legal landscape but also in support of a trend toward social justice. More recently, Diversity, Equity, and Inclusion (DEI) offices are emerging as proactive supporters of accessibility. Several interviewees referenced CAST's [Universal Design for Learning Guidelines](#) as essential for contextualizing access and equity in higher ed learning environments. Regardless of any apparent evolution in how universities are improving opportunities for students with disabilities, the message from our interviewees was that compliance remains an essential motivator, particularly for administration.

A case in point was the common agreement of the need for more consistent implementation of existing institutional policies for procuring digital materials and technologies that comply with federal accessibility standards. While vendor agreements used by universities in the purchase of IT are known to communicate digital accessibility requirements, the continuous barriers experienced by students with disabilities indicate that procedural breakdowns persist. Interviewees who spoke to this issue referred to the reliance on Accessibility Compliance Reports (ACR) (vendor-submitted Voluntary Product Accessibility Templates (VPAT)) by procurement managers as both necessary and problematic.

The VPAT is the federally accepted standard format for vendors to report the extent to which a digital product meets the Section 508 accessibility standards. As such, universities commonly require that vendors submit ACRs as part of standard procurement procedure. Several limitations were cited, however, in the use of ACRs. First, the quality of an ACR (i.e, accuracy and completeness) is limited by the expertise of the vendor representative(s) who completed the VPAT. Some companies have accessibility experts on staff or contract with 3rd party evaluators, while others designate staff who may not have the necessary knowledge and skills. Second, the frequency of product upgrades results in outdated ACRs as versions of the same product often differ significantly. And third, universities often misuse the ACR by either equating a vendor's submittal as verification of accessibility or by relying on the ACR as the sole source of information about a product's accessibility. Interviewees offered that a review of an ACR should be combined with other strategies and tools, such as asking to directly speak with a vendor accessibility manager and independently testing products with AT.

Training on digital accessibility for a wide range of university personnel was identified as another area of high need. In addition to procurement managers who are making large scale purchases at the system or campus level, personnel who are making smaller purchases at the department or course level, and therefore not required to follow formal procurement policy, need to know best practices for determining accessibility. As faculty respond to the demand for lower cost or openly available course materials, such as Open Education Resources (OER), training on protocols for selecting accessible online materials is urgent.

Very few course materials developed by faculty, such as documents, web pages, and slide decks, are designed to be accessible for students who use AT. This puts an unnecessary burden on disability services offices that must retrofit these materials, frequently with insufficient notice to provide students with the information by the time of instruction. With basic training and resources, both fulltime and adjunct faculty can create accessible content for students with physical, sensory, and learning disabilities. Training clearly lags behind the availability of a wide range of accessibility supports in digital materials and technologies used in postsecondary education.

Focus Group on the Draft of Version 2.0 Critical Components for the Provision of AEM in Higher Education

In October of 2020, AEM Center staff convened a virtual focus group of higher education accessibility experts to provide feedback on a first draft of the revised Critical Components for the Provision of AEM in Higher Education. Members of the focus group included some of the same experts who served roles in the knowledge development activities (Stephan Smith and Mark Greenfield), as well as Jen Dee, Disability and AT Specialist, MIT; Joanne Benica, Director, Disability Services Center, University of Southern Maine; Mark Nichols, Senior Director, Universal Design & Accessible Technologies, Virginia Tech; and Carolyn Phillips, Director of Services & Learning; Director & PI of Tools for Life and National Pass It On Center, Georgia Tech.

At the time of this focus group convening, universities were cautiously navigating the fall semester as COVID-19 continuously threatened to disrupt the delivery of education. The crisis, particularly the campus closures during the previous semester, highlighted the critical importance of accessible digital materials and technologies as a lifeline for continuity of education for students with disabilities. The pivot to online learning was done without funding available for new tools or additional staff to ensure that students with disabilities received the accommodations needed for equal access to the same modified instructional experience as their peers. The focus group spoke of the challenges of remote proctoring, inaccessible assessments, and barriers for numerous

students who use AT and could not access the curriculum or activities that moved online.

It was in the context of delivering higher education during the COVID-19 pandemic that the focus group members expressed enthusiasm about the AEM Quality Indicators. While their institutions may lack a systematic, system- or campus-wide approach to accessibility, they reported a sharp increase in awareness of the barriers experienced by students with disabilities.

The following key themes emerged from the focus group:

- Communication and coordination across the system and on campus are essential for achieving the consistent provision of high-quality accessible materials and technologies for students with disabilities.
- Accessibility needs to be addressed in both procurement processes and in the materials created by faculty.
- Institutions must do better at not only providing accessible materials and technologies but doing so in a timely manner; equity of access means that students with disabilities receive materials and technologies at the time they are provided to the class.
- Policies related to the timely provision of high-quality accessible materials and technologies are usable when communicated via written guidelines and procedures that are understandable to all relevant stakeholders, and available through multiple means.
- Comprehensive and systematic training for all personnel with responsibilities related to program and course materials and technologies is essential.
- The impact of the materials and technologies provided to students with disabilities can and should be measured through data already being collected, such as student retention, achievement, and graduation rates.
- Prioritizing an inclusive technology infrastructure requires strategic planning and funding at the system and campus level.

The above themes informed the final Critical Components of the AEM Quality Indicators for Higher Education.

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 next four years of the project.

References

Adler, P. (2015, April 8). *Justice Department and edX Reach Agreement on Providing Accessible Online Content*. Association of Research Libraries. Available online: <https://www.arl.org/news/justice-department-and-edx-reach-agreement-on-providing-accessible-online-content/>

Erickson, W. Lee, C., & von Schrader, S. (2010). 2008 Disability Status Report: United States. Ithaca, NY: Cornell University Rehabilitation Research and Training Center on Disability Demographics and Statistics. Available online: <https://www.disabilitystatistics.org/reports/report.cfm>

Erickson, W., Lee, C., & von Schrader, S. (2020). 2018 Disability Status Report: United States. Ithaca, NY: Cornell University Yang-Tan Institute on Employment and Disability (YTI). Available online: https://www.disabilitystatistics.org/StatusReports/2018-PDF/2018-StatusReport_US.pdf

Gierdowski, Dana C. ECAR Study of Undergraduate Students and Information Technology, 2019. Research Report. Louisville, CO: ECAR, October 2019. Available online: <https://library.educause.edu/-/media/files/library/2019/10/studentstudy2019.pdf?la=en&hash=25FBB396AE482FAC3B765862BA6B197DBC98B42C>

Kim, S. (2019, November 29). Harvard University, the latest higher education institution to be mandated to provide video closed captioning. Forbes. Available online: <https://www.forbes.com/sites/sarahkim/2019/11/29/harvard-university-national-assoc-of-the-deaf-lawsuit/?sh=353daf286699>

King, H. (2019, August 22). Avoid the OCR Letter: Ensure your College's OCR Compliance. OmniUpdate. Available online: <https://omniupdate.com/blog/posts/2018/dreaded-ocr-accessibility-letter.html>

Koenig, R. (2020, April 30). How Colleges Can Improve Accessibility in Remote Courses. EdSurge. Available online: <https://www.edsurge.com/news/2020-04-30-how-colleges-can-improve-accessibility-in-remote-courses>

Koenig, R. (2020, October 28). College Students with Learning Disabilities Are Asking for More Support. Will They Get it? EdSurge. Available online:
<https://www.edsurge.com/news/2020-10-28-college-students-with-learning-disabilities-are-asking-for-more-support-will-they-get-it>