

Accessible Educational Materials Technical Assistance (AEM-TA) Document

Procedures for Procuring and
Providing Accessible Educational
Materials (AEM), Accessible
Technology, and Assistive
Technology

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01 | Purpose and Introduction

Purpose

Oklahoma ABLE Tech is the statewide Assistive Technology (AT) Act Program located at Oklahoma State University in the Department of Wellness. Oklahoma ABLE Tech is funded through the Administration for Community Living (ACL) of the U.S. Department of Health and Human Services, and maintains coordination and collaboration efforts with partners throughout the State of Oklahoma. Oklahoma ABLE Tech uses funds from ACL, combined with leveraged funds from various partners, to enhance the opportunities for Oklahomans with disabilities of all ages to access and acquire needed AT for education, employment, and community activities statewide. A main activity through which this is achieved includes providing technical assistance (TA). TA is defined as direct problem-solving service provided to assist programs and agencies in improving their services, management, policies, and/or outcomes. The purpose of this Accessible Educational Materials (AEM) TA document is to assist entities in Oklahoma in understanding best practices regarding AEM service delivery including related accessible technology and assistive technology devices and services.

Introduction

"The accessibility problems of today are the mainstream breakthroughs of tomorrow." - Interview with Google's Eve Andersson, 2016

In general, a person's ability to see, hear, read, and physically interact with information and technologies is paramount to the individual's ability to comprehend and apply the information. For people with disabilities, there are often unnecessary barriers to accessing and interacting with needed information and technologies. This creates a culture of exclusion and discrimination, whether intentional or unintentional, against those who have various disabilities.

"Do the best you can until you know better. Then when you know better, do better." - Maya Angelou

The Office of Special Education and Rehabilitative Services at the U.S. Department of Education defines AEM as "print- and technology-based educational materials, including printed and electronic textbooks and related core materials that are designed or enhanced in a way that makes them usable across the widest range of learner variability, regardless of format (e.g., print, digital, audio, video)" (footnote 10, Federal Register/Vol.79, No. 90/Friday, May 9, 2014/Notices, page 26728). The need for AEM begins in early childhood, continues through primary and secondary school, post-secondary studies, and into the workforce and community. This document will explain the legal requirements for providing individuals with disabilities access to materials and technologies, best practices for developing and implementing a coordinated system for the provision and use of high-

quality materials and technologies and include information on purchasing and creating accessible computer- and web-based materials for individuals who need them. The days are gone when schools, workplaces, and agencies provide textbooks/worksheets, manuals/workbooks, etc. exclusively in hard-copy format. Now it is commonplace for learners to interact with materials in multiple ways both online and in-person. Technology not only improves access to information for a broad range of learners but sometimes makes the impossible possible - when those who acquire/create and deliver the content follow recommended best practices.

Important to note: Utilizing the Universal Design for Learning (UDL) framework along with providing AEM and accessible technologies improves and optimizes teaching and learning for all.

Universal Design for Learning (UDL), pioneered by CAST, is a framework that guides the design of learning experiences to proactively meet the needs of all learners. As defined by CAST, UDL is a framework to guide the design of learning environments that are accessible and challenging for all. Ultimately, the goal of UDL is to support learners to become “expert learners” who are, each in their own way, purposeful and motivated, resourceful and knowledgeable, and strategic and goal driven. UDL aims to change the design of the environment rather than to change the learner. When environments are intentionally designed to reduce barriers, all learners can engage in rigorous, meaningful learning.

[View UDL Guidelines from CAST: udlguidelines.cast.org](http://udlguidelines.cast.org)

02 | What are AEM, Accessible Technology, Assistive Technology, and Who Needs Them?

When materials and technologies are referred to as accessible, it means individuals with and without disabilities can utilize learning materials to meet education, employment, and community goals.

Accessible educational materials (AEM) are print- and technology-based educational materials, including printed and electronic textbooks and related core materials that are designed or enhanced in a way that makes them usable across the widest range of learner variability, regardless of format (e.g., print, digital, graphic, audio, video).

- [AEM Center: What is Accessibility?](https://aem.cast.org/get-started/defining-accessibility): aem.cast.org/get-started/defining-accessibility

Accessible technology is universally designed allowing learners to interact with the content in multiple ways and read/comprehend to the greatest extent possible. Using this technology, individuals can adjust text size, colors, and contrast, listen to text read aloud with human or computer-generated voices, for example.

Assistive Technology (AT) is any item, piece of equipment, software program, or product system that is used to increase, maintain, or improve the functional capabilities of persons with disabilities. AT is also the service that directly assists an individual with a disability in the selection, acquisition, or use of a device. In contrast to accessible technology, AT is designed to meet the specific needs and address specific barriers for individuals with disabilities including those needing to read the learning materials. Examples include:

- A person who has a visual impairment reads text by touch using electronic braille devices, and/or applications on a tablet that use optical character recognition (OCR) to read text in an image.
- A person who is unable to use a mouse or touchscreen may be able to interact with learning materials using a keyboard or switches.
- A person who is deaf or hard of hearing can comprehend spoken words on videos and audio recordings through closed captions, transcripts, or sign language interpretation.

Accessible Format

Alternative forms of text-based materials allowing individuals with disabilities to access the content without barriers - as a person without such disability would. Customary formats include audio, tactile (e.g., braille and tactile graphics), digital text, and large print.

- [AEM Center: About Accessible Formats](https://cast.org): cast.org

Audio

Audio presents content as sound with either a recorded human voice or synthesized electronic speech, without visual text. Audio format differs from typical audiobooks by including accessibility features such as navigation, search, and bookmarking.

Tactile

Tactile formats include braille and raised images. Braille is a tactile system for reading and writing raised dot patterns for letters, numbers, and punctuation marks. Braille enables individuals who are unable to effectively comprehend print due to blindness or visual impairment to read using their fingers. Braille is either embossed (a hard-copy document) or refreshable (generated digitally and accessed on a braille display device). The National AEM Center describes tactile graphics as "images, such as maps, charts, and graphs that are designed to be interpreted by touch.

Digital Text

Digital text is accessible electronic text which can be read on a computer, tablet, mobile device, or electronic braille display using specialized book reading apps or software. Refreshable braille displays work with a type of digital text called Braille Ready Format (BRF). The accessible format of digital text offers many accessibility features which can be customized to improve user perception and comprehension. With digital text, the user can change the font size and style; adjust the text, background, and highlight colors; navigate by chapter, page, and keyword; and have the text read aloud with natural-sounding computer voices. Contrary to popular belief, not all digital text is accessible. For example, text that cannot be selected in some way (because it is an image) may not be accessible to a screen reader.

Large Print

Large print is text that has been enlarged to a font size of 18 point or larger to accommodate the needs of individuals who have visual impairments. Books produced in large print format are typically much bigger than the original and include enlarged pictures and graphics. When using a copy machine to enlarge worksheets or other documents, care must be taken to ensure contrast and image proportions are maintained.

Accessible Formats vs. Modified Materials

Accessible formats include the same content as printed textbooks or other instructional materials but change only the way the content is presented to an individual. No information is added or removed. Modified materials address the same educational goals as the standard document, but the content is modified (usually made less complex) so the individual can better understand it. If an individual has a cognitive disability in addition to a print disability, the individual may need modified materials in an accessible format to access the information.

Even with the increasing use of computer-based learning materials, printed materials still have an important, if not primary, role in learning. Individuals who are unable to see or comprehend print due to visual impairments or reading disabilities, or who are unable to

hold a book and turn pages due to a physical impairment, will need to receive text-based educational materials in accessible formats.

“Simply put, an accessible format is an alternative way of presenting the information in a material.”

[View FAQ: Trialing a Range of Formats](https://aem.cast.org/acquire/faq-trialing-range-formats) (AEM Center at CAST): aem.cast.org/acquire/faq-trialing-range-formats

AEM can help individuals who have difficulty comprehending standard text to access and interact with the same content as peers and increase participation and learning at home, school, work, and the community.

Why Provide AEM?

Individuals with disabilities face many obstacles to learning, including physical and digital barriers. Just as buildings are required to have physical accommodations like wheelchair-accessible ramps and automatic doors, digital materials must also be accessible to ensure individuals with disabilities have alternative methods and tools to interact with learning components delivered electronically. This includes digital books, websites, apps, slide decks, videos, and other technology-based systems.

Accessible learning materials and technologies should be made available in a timely manner (at the same time they are provided to other individuals) so the same learning opportunities, to fully and independently participate in activities, are made available to all.

Providing AEM to individuals with disabilities is more than a good idea, it is also the law. The following section will provide an overview of multiple federal and state laws, regulations, and guidelines pertinent to the provision of AEM, accessible technology, and AT in early childhood (EC), K-12, higher education (HE), and workforce development (WFD) programs.

03 | Laws, Regulations, and Guidelines Related to the Provision of AEM

Many federal and state accessibility laws, regulations, and guidelines inform the civil rights and access needs of people with disabilities across a variety of environments – education, employment, and community living. See Appendix A for information on laws/regulations/guidelines specific to each environment.

Synopsis

There are laws, regulations/policies, and guidelines (e.g., Dear Colleague Letters) related to several topics surrounding accessibility, including, but not limited to:

- Physical accessibility (buildings, spaces)
- Digital accessibility (websites, electronic documents, software)
- Communications and video accessibility (text messaging, e-mail, instant messaging, video communications services and mobile web browsers, also includes closed captions on videos)
- Accessibility of hard copies (books and textbooks)
- Information and Communication Technology (ICT) Accessibility (procurement of hardware, software, and licenses for use)

These laws, regulations/policies, and guidelines should inform best practice in accessibility and timely provision of AEM leading to equal access in service delivery. This includes individuals with disabilities across the lifespan and in all environments - early childhood, K-12, higher education, workforce, and the community. Individuals with disabilities must be able to acquire the same information, engage in the same interactions, and enjoy the same services as those without disabilities with substantially equivalent ease of use.

- For further explanation of effective communication, view the [Dear Colleague Letter \[PDF\]](#) from the U.S. Department of Education and the U.S. Department of Justice: www2.ed.gov/about/offices/list/ocr/letters/colleague-effective-communication-201411.pdf
- [Joint Department of Justice and Department of Education "Dear Colleague" Letter on Electronic Book Readers](#) : https://www.ada.gov/kindle_ltr_eddoj.htm

04 | Quality Indicators for AEM

What are the AEM Quality Indicators?

The Quality Indicators for the Provision of Accessible Educational Materials and Technologies (the AEM Quality Indicators) describe the essential elements of a high-quality system for the provision of AEM. The National AEM Center assists in the implementation of the Quality Indicators through the development and delivery of technical assistance. There is one set of Quality Indicators, with separate “Critical Components” for EC, K-12, HE, and WFD. Each Quality Indicator includes a clarifying statement that explains the intent behind the indicator. The Quality Indicators can guide entities in developing and implementing effective, efficient procedures for the timely and equitable provision of AEM, accessible technology, and related services for individuals with disabilities. The following section includes information from the National AEM Center regarding the AEM Quality Indicators with specific information relevant to Oklahoma’s coordinated system for the provision of AEM and describes the essential components of the 7 Quality Indicators:

1. A Coordinated System for the Provision of High-Quality Accessible Materials and Technologies
2. Acquisition and Provision in a Timely Manner
3. Written Guidelines
4. Comprehensive Learning Opportunities and Technical Assistance
5. A Systematic Data Collection Process
6. Use of Data to Guide Changes
7. Allocation of Resources

Throughout this section, we provide excellent examples from Oklahoma and other states that exemplify the provision of AEM, accessible technologies, and AT. The embedded hyperlinks allow for in-depth exploration of various resources related to training, implementation, and best practices.

The following Quality Indicators and Exemplars were taken from [CAST and their AEM Pilot: aem-pilot.cast.org](https://aem-pilot.cast.org)

Quality Indicator 1: A Coordinated System

Statement: The entity has a coordinated system for providing high-quality accessible materials and technologies for all individuals with disabilities who need them.

Intent: A coordinated system means that the entity has methodical and integrated means by which individuals who need them receive accessible formats of print and digital materials, accessible technologies, and the AT needed to use them.

State-led, Cross-Sector Leadership Team

In Oklahoma, strategic collaborations are achieved by a state-led, cross-sector leadership team with members from relevant state and local agencies, departments, and programs. Including:

- AIM Center at the Oklahoma Library for the Blind and Physically Handicapped
- Deaf/Blind Technical Assistance Project
- Decoding Dyslexia Oklahoma
- Families/Caregivers/Advocates
- Individuals with Disabling Conditions
- Institutions of Higher Education (i.e. Student Accessibility Services, ADA Coordinator, Section 504 Coordinator, Electronic Information Technology/ICT Personnel, Center for Teaching and Learning Personnel, Diversity Officer, Faculty, Library Personnel, Procurement Personnel)
- Liberty Braille
- Local Education Agencies
 - Administrators, Special Educators, Related Service Providers, etc.
- Oklahoma ABLE Tech
- Oklahoma Head Start
- Oklahoma Office of Workforce Development
- Oklahoma Parents Center (Parent Training & Information Centers/Community Parent Resource Centers (PTIs/CPRCs))
- Oklahoma State Department of Career Technology and Education (CareerTech)
- Oklahoma State Department of Education (i.e. Assessment, Education Technology, Instructional Materials, SoonerStart/Early Intervention, Special Education, 619 Coordinator, Transition Coordinator, etc.)
- Oklahoma State Department of Health
- Oklahoma State Department of Rehabilitation Services
 - Oklahoma School for the Blind
 - Oklahoma School for the Deaf
 - Vocational Rehabilitation

- Services for the Blind and Visually Impaired
- Special Education Resolution Center or other Legal Advocate

Coordinated systems need to exist for all entities and are best developed through collaborations and teamwork.

Best Practices for Ensuring Digital Materials and Technologies are Accessible

Once a cross-sector leadership team with members from relevant, experienced roles is established for an entity, the team can work to develop a means for ensuring that digital materials and technologies purchased or created are accessible to all who need them. Best practice includes:

- All digital materials and technologies purchased from commercial, open, and free sources comply with Section 508 of the Rehabilitation Act and the current version of the Web Content Accessibility Guidelines (WCAG) at level AA.
- Personnel who create digital materials (e.g., videos, digital stories, web pages, and slide decks) use the accessibility practices afforded by common software tools, such as web authoring software, Google Workspace, iWork, Microsoft Office, and YouTube.

Note: For early childhood these materials are for use in inclusive social and learning activities.

Ensure Accessible Formats of Print, Text-Based, Training, and Related Core Materials

With a strong team in place and a means for ensuring accessible materials are purchased and created per the law, entities ensure accessible formats of print, text-based, training, and related core materials are provided for individuals who need them, with appropriate copyright protection.

Many resources offer accessible formats for individuals who need them. Examples include:

- Under criteria set by the National Library Service (NLS), eligible individuals can receive accessible formats of materials under copyright (e.g., braille, large print, digital text, or audio formats of a textbook).
- Accessible formats acquired from restricted libraries such as Bookshare, American Printing House (APH), and Learning Ally for individuals who meet the eligibility requirements of the specific library.
- Additionally, in preschool and K-12 environments, the IDEA created the NIMAC, which facilitates acquisition of accessible formats for eligible children who also receive special education services.
- In the HE and WFD environments, accessible formats of copyrighted materials can also be requested on behalf of eligible job seekers directly from the publisher.

Guiding Questions and Exemplars for States or Districts Implementing Quality Indicator 1

1.1: How is your state or district doing with providing accessible formats of copyrighted textbooks and related core curriculum materials for eligible students?

Exemplar 1.1: See [Texas Education Agency’s Proclamation 2020](#) for an example of material accessibility requirements in a Request for Proposals (RFP) for instructional materials. Texas Education Agency (TEA) calls for new instructional materials from publishers by issuing annual proclamations. In Proclamation 2020, the call was for high school English instructional materials and English as a second language instructional materials for middle and high school. See pages 11 and 12 for the language that TEA uses to describe NIMAS-related requirements. Note that publishers of mathematics and science materials are instructed to use the latest applicable version of MathML3 Structure Guidelines. Another useful clause requires publishers of print materials to name a contact with whom TEA can communicate about NIMAS files.

Note for school districts: Texas provides a state adoption list of curriculum materials for districts and ensures accessibility in the process. Check with your state agency to learn about existing procurement policies; regardless, each district is responsible for the provision of accessible materials and technologies for students who need them.

([Oklahoma Textbook Policies](#))

1.2: How is your state or district doing with procuring digital instructional materials and technologies, for use by all students, that meet accessibility standards?

Exemplar 1.2: Take another look at [Texas Education Agency’s Proclamation 2020](#). This time, read the accessibility requirements for electronic instructional materials listed on page 11. Note that TEA clearly refers to the Section 508 standards and the most current applicable version of the Web Content Accessibility Guidelines (WCAG). In addition to calling out accessibility standards on page 11, pages 15-16 present the details of a required accessibility report. Publishers and other vendors of digital materials must contract with an independent third party to provide a report that verifies compliance with Section 508 and WCAG level AA. Failure to provide a report verifying that a product meets the required accessibility standards will result in that product’s removal from TEA’s adoption list.

1.3: How is your state or district doing with providing accessible teacher-created materials?

Exemplar 1.3: Montgomery County Public Schools (MCPS) in Maryland provides continuing education credit to teachers who complete activities in the [AEM Center’s Online Learning Series on Accessible Materials & Technologies](#). The series includes training on creating accessible documents, such as Word and PDF, and captioning videos. While the AEM Center provides the content and activities for each module as an

open resource, MCPS offered credit to teachers who participated in a district-moderated discussion forum and submitted artifacts demonstrating their learning. Linda Wilson, AT Instructional Specialist for MCPS, commented, "Using the materials from AEM Center's online course allowed us to provide continuing professional development (CPD) credit to many more staff than would have been possible if we had to design the course on our own. The interest in the course is extremely high with participants rating the content as highly relevant to their work."

Quality Indicator 2: Provision in a Timely Manner

Statement: The entity provides high-quality accessible materials and technologies in a timely manner.

Intent: In general, “timely manner” means individuals who require accessible materials and technologies receive them at the same time that materials and technologies are distributed to all others in a program. For example, if an individual needs a braille version of a book to learn/participate in an activity, that accessible format is provided at the same time others receive their books. Since acquiring accessible formats may take time, entities need to coordinate and plan early to meet the needs of individuals with disabilities. It is also best practice to have policies, procedures, and practices in place to identify and resolve any delays in providing AEM and technologies to individuals who need them.

Strategic Collaborations for Timely Delivery of Accessible Materials and Technologies

Once the entity has defined “timely manner,” the team should collaborate (internally and externally) to communicate the definition of “timely manner” to all stakeholders and start working towards acquiring accessible materials and technologies for those who need them.

Timely Manner Across Environments:

Early Childhood Education and K-12

- Accessible materials and technologies are considered:
 - in Part C services and included on the Individualized Family Service Plan (IFSP) as needed.
 - in Part C to Part B transition planning and included on the Individualized Education Program (IEP) as needed.
 - in Part B services and included on the IEP and in 504 plans as needed.
- When it is determined a child needs accessible materials and technologies as part of an IFSP, IEP, or 504 Plan, a plan for timely provision is made.
- Local AT and educational technology personnel collaborate to ensure that the most accessible versions of digital materials and learning technologies are selected for use by all children, including children with disabilities.
- Local programs/districts coordinate with accessible media producers (AMPs), including Bookshare and the State Instructional Materials Center (IMC), to ensure timely delivery of accessible formats for children who need them.

Higher Ed and Workforce Development

- Procurement personnel/departments at the state and local/campus level prioritize the purchase of digital materials and technologies that are accessible and communicate with vendors to ensure understanding of accessibility requirements in the bidding process, contracts, and purchase orders.

- Instructors, trainers, and other personnel who create instructional/training materials collaborate with Oklahoma ABLE Tech or other service to coordinate resources for training teachers on best practices for creating accessible digital materials used by all students.
 - Disability/accessibility services personnel collaborate with agency/program communications personnel to ensure that procedures for requesting accommodations, including accessible formats and AT, are widely communicated.
- Disability/accessibility services personnel collaborate with students/job seekers/employees to identify delays to receiving accessible materials and technologies, and then collaborate with appropriate departments and service providers to find solutions.

Clear and effective internal and external communication practices are vital to the success of Higher Ed and Workforce Development entities. Such communication facilitates the timely provision of AEM, accessible technologies, and AT. It may include communication with staff/employees about the definition of “timely manner”; communication with vendors about expectations for accessible content delivery; and/or communication about considering and requesting accommodations and AT.

How Can Entities Optimize Timely Delivery?

When entities have multiple means for acquiring AEM and accessible technologies and providing them in a timely manner, and there are plans (and contingency plans) in place for their provision, entities are well on their way to fulfilling the intentions of Quality Indicator 2.

Early Childhood Education and K-12

- Proactive planning for inclusive learning and social activities includes procuring or creating accessible materials and technologies that may be needed by children with disabilities.
- Procuring the most high-quality and accessible digital materials and technologies that are available for purchase.
- Creating organizational accounts with AMPs, such as Bookshare and Learning Ally.
- Identifying and correcting delays in timely manner when they happen.
- Including timelines for providing accessible formats of core curriculum materials when entering purchasing agreements with publishers.

Higher Ed and Workforce Development

- Procuring the most accessible and high-quality digital materials and technologies that are available for purchase.
- Including timelines and/or roadmaps for providing accessible materials and technologies in purchase agreements.
- Informing students of required and recommended textbooks and supplemental materials at the time of course registration.

- Purchasing institutional subscriptions to third party media conversion and captioning services.
- Creating organizational accounts with services that provide accessible formats of copyrighted materials for eligible students, such as Bookshare, Learning Ally, and AccessText.
- Coordinating with the state Instructional Materials Center or American Printing House (APH) for braille, large print, and tactile materials.
- Identifying and correcting delays to timely manner when they happen.

Guiding Questions and Exemplars for States or Districts Implementing Quality Indicator 2

2.1: How is your state or district doing with ensuring that students receive accessible materials and technologies in a timely manner?

Exemplar 2.1: Under IDEA 2004, every state must have a definition for timely manner. See [Florida's Technical Assistance Paper on Accessible Instructional Materials](#) for an example. Note Section A-5 on page 3 reads: "... the SEA [State Educational Agency] must ensure that all public agencies take all reasonable steps to provide instructional materials in accessible formats to children with disabilities who need those instructional materials at the same time as other children receive instructional materials."

2.2: How is your state or district doing with acquiring accessible materials in a timely manner through no cost or low cost services?

Exemplar 2.2.1: Eligible students in Iowa receive accessible formats of print materials through two programs that help ensure timely manner:

- The [Iowa Department of Education](#) notifies districts of the availability of Bookshare, an online library of wide-ranging educational materials in digital text format, such as textbooks, children's books, classic literature, career resources, etc. The service is free to students who meet Bookshare's qualifications.
- Braille materials are provided to students through [Braille on Demand](#), a one-day braille transcription service from Iowa Prison Industries (IPI). The next-day return policy of up to 10 pages, including tactile graphics, has contributed to exponential growth in the use of the service by schools. The Iowa Department of Education contracts with IPI. Listen to a [UMass Amherst AccessAbilities podcast about the IPI Braille on Demand program](#).

Exemplar 2.2.2: Texas Education Agency (TEA) coordinates the provision of accessible formats of print materials for eligible students through Bookshare and Learning Ally:

- While Bookshare is free for eligible students, TEA contracts with Bookshare for personnel to support the service in districts. Visit [Bookshare's Accessible Books for Texas](#) to learn more.
- TEA funds a state membership to Learning Ally, an online library of human-narrated audiobooks, for eligible students. Like the partnership with Bookshare,

TEA contracts with Learning Ally for personnel to support the service in districts. Visit [Learning Ally: Texas Solutions](#) to learn more.

Quality Indicator 3: Written guidelines

Statement: The entity develops and implements written guidelines on the provision and use of high-quality accessible materials and technologies and disseminates them to all stakeholders.

Intent: Guidelines, informed by federal, state, and local policy document the roles and responsibilities for timely provision and use of high-quality accessible materials and technologies. Guidelines are communicated in multiple formats and broadly disseminated to ensure that all responsible parties can understand and apply them.

It is best practice to develop written guidelines that include the following:

1. **Specific laws and policies** relevant to the provision of AEM, accessible technologies, and AT, including assessment.
2. Details for **procuring accessible digital materials and technologies.**
3. **A decision-making process** for the provision of accessible formats of print and text-based materials.
4. **Delineation of roles and responsibilities** for all stakeholders at all levels.

Once guidelines are developed, it is important to ensure they are available in multiple formats and disseminated through varied means to all stakeholders.

1. For **specific laws and policies** relevant to the provision of AEM and accessible technologies, see Appendix A.
2. Details to consider for **procuring accessible digital materials and technologies** include:
 - a. Inclusion of accessibility requirements in purchase agreements with curriculum developers and vendors. The AEM Center provides sample language for inclusion in purchase agreements that presents the minimum components to be communicated to vendors.
 - i. Sample Language: **[Agency Name]** requires digital materials and technologies to be accessible to students/employees/community members with disabilities. Digital materials and technologies should conform to the standards for accessibility set forth in Section 508 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794d), and its implementing regulations (36 C.F.R. § 1194). The Revised Section 508 incorporates the Web Content Accessibility Guidelines (WCAG) by reference. Web and non-web content (including websites and documents) is required to conform to the most current version of WCAG at level AA in order to meet Section 508 requirements.
 - b. Evaluate the accessibility of curricula and educational products using automated and manual evaluation tools.
 - c. When making preliminary assessments regarding the availability of electronic and information technology products and services with features that support accessibility, use Oklahoma's Voluntary Product Accessibility Template.
 - i. [View Oklahoma's Voluntary Product Accessibility Template Instructions: ok.gov/cio/documents/VPATInstructions.pdf](http://ok.gov/cio/documents/VPATInstructions.pdf).

3. The **decision-making process** for the provision of accessible formats of print and text-based materials varies depending on the entity. See below for additional details that may be included in written guidelines based on the various EC, K-12, HE, and WFD environments.
 - a. **EC and K-12**

Parents/Caregivers/Educators/Service providers follow a series of actions starting with considering the child’s need for accessible formats, selecting formats, identifying sources for obtaining those formats, and providing supports needed to use the formats all while protecting the copyright of the printed and digital materials.
 - b. **HE and WFD**

Students/Job seekers/Employees need procedures for requesting accessible formats (or alternative formats), accessible technology, and AT from disability/accessibility services personnel. Additionally, disability/accessibility services personnel also need procedures for provision of accessible formats (e.g., in compliance with the Section 121 of U.S. Copyright Law/Chafee Amendment).

 - i. [View the Chafee Amendment](http://aem.cast.org/acquire/chafee-amendment): aem.cast.org/acquire/chafee-amendment
 - ii. [AEM Center: Decision-Making & Accessible Formats](http://aem.cast.org/acquire/decision-making-accessible-formats): aem.cast.org/acquire/decision-making-accessible-formats
4. **Delineation of roles and responsibilities** of all stakeholders at all levels is important to ensure the entity’s procedures are executed in an appropriate manner for the timely provision of accessible materials, accessible technology, and assistive technology. In addition to providing guidelines, an entity may consider including responsibilities related to the timely provision of accessible materials, accessible technologies, and AT within job descriptions.
 - a. **EC**

Roles and responsibilities should be delineated during the decision-making process; when determining who will assist with the procurement of accessible materials, accessible technologies, and AT; the acquisition of accessible formats; and organizing/providing training regarding use of the materials and technologies.
 - b. **K-12, HE, and WFD**

Roles and responsibilities should be delineated during the procurement of accessible digital materials, accessible technologies, and AT; when evaluating for accessibility; communicating accessibility requirements with vendors; and ensuring that required accessibility language is included in purchase agreements. Roles and responsibilities should also be delineated in the selection of accessible materials (e.g., textbooks, articles, video, Open Educational Resources (OER)), in the creation of accessible digital materials (e.g., documents, slide decks, video, podcasts, web pages), and in the provision of accommodations for students/job seekers/employees who require accessible formats, accessible technologies, and AT.

Once written guidelines have been created, they should be made available in multiple formats (e.g. print/large print, accessible digital text, closed-captioned and audio described video, audio with transcript, and braille) and disseminated through varied means (e.g. program orientation materials, websites, technology plans, reference cards, infographics, pamphlets, handouts, email) to reach all stakeholders at all levels. Note: Getting input from

stakeholders at all levels during the development of written guidelines is key to getting buy-in and follow-through with the procedures.

Guiding Questions and Exemplars for States or Districts Implementing Quality Indicator 3

3.1: How is your state or district using guidelines that include the wide range of areas where accessibility matters?

Exemplar 3.1.1: Florida’s Department of Education has developed a series of guidance documents for use at the state and district levels. These include a comprehensive Accommodations Manual and Technical Assistance Papers (TAPs) on Accessible Instructional Materials (AIM) and Assistive Technology (AT). These documents provide definitions of key terms, guidance for the selection and procurement of both materials and technologies, consideration in IEPs and more. To ensure accessibility in procurement processes, Florida developed a Universal Design for Learning (UDL) Questionnaire for bidders to report the specific learner supports in their products, including flexible presentation and navigation options, study tools, and compatibility with AT.

Exemplar 3.1.2: Ysleta Independent School District (YISD) in El Paso has been making measurable progress on improving accessibility in its guidelines since 2017. The district of 43,000 students and 63 campuses now has accessibility requirements in its classroom standards for technology access and website guidelines.

- See [YISD’s 21st Century Campus Technology Access Checklist](#). Note on the bottom of the fourth page that educational and testing materials are required to be accessible at all levels of the district.
- See [YISD’s Draft Website Guidelines for Departments](#). Note that conformance to WCAG 2.0 Level AA is required. YISD provides a list of specific examples of accessible elements of websites and refers staff to WebAIM and the AEM Center for additional resources.

3.2: How is your state or district doing with assigning roles and responsibilities for overseeing and carrying out guidelines?

Exemplar 3.2.1: Note that the Florida Department of Education includes a point of contact, including department, email address, and telephone number, at the beginning of its Accommodations Manual and TAPs (see Guiding Question 3.1).

Exemplar 3.2.2: The [AEM Center’s sample procurement language](#) instructs users (states, districts, universities, and other users of the language) to point bidders to an accessibility team with an email address and telephone number.

Exemplar 3.2.3: Although the concept is emerging in K-12, higher education institutions have been using accessibility teams as points of internal and external contact for a number of years. California State University (CSU) is a case in point. The names and contact information of the members of [CSU’s Accessible Technology](#)

[Initiative \(ATI\) Workgroup](#) are listed on its website. As you look at this example, note the wide range of roles and departments represented on the workgroup.

Quality Indicator 4: Comprehensive learning opportunities and technical assistance

Statement: The entity provides or arranges for comprehensive learning opportunities and technical assistance (TA) that addresses all areas of the provision and use of high-quality accessible materials, accessible technologies, and AT.

Intent: Comprehensive learning opportunities and TA are ongoing, draw from multiple sources, and are offered in different forms that benefit stakeholders at all levels.

Comprehensive learning opportunities and TA should include content that addresses the needs of stakeholders at all levels. Examples include:

1. Educators and related service providers **learn to evaluate/assess** students' needs for accessible materials, accessible technology, and AT and provide them (EC and K-12).
2. All individuals with disabilities and those who serve them **learn how to use** needed accessible materials, accessible technology, and AT (All).
3. Curriculum/Training coordinators and pre-service educators **learn how accessibility relates** to the selection and use of high-quality curriculum, instruction, and assessment (All).
4. Coaches and counselors **learn to support** individuals who use accessible materials, accessible technology, and AT (WFD).
5. Transition coordinators **learn how to help students successfully transition** with needed accessible materials, accessible technology, and AT (All).
6. Technology personnel **learn to develop a technology infrastructure** that supports interoperability with AT (All).
7. Procurement/purchasing decision makers **learn how to communicate accessibility requirements** to vendors, both orally and in written contracts and purchase agreements (All).
8. Family members/Caregivers/Students/Job seekers/Employees **learn about accommodations, how to access them** as well as accessible materials, **and how to use them** with related accessible technology and AT (All).
9. Service providers, educators, faculty, instructional designers and disability/accessibility services personnel **learn how to select, create, use, and provide** accessible digital materials for teaching and learning (All)
10. Administrators, university deans, and department chairs **learn to allocate resources** for ensuring the provision of accessible materials, accessible technology, and AT within school districts, colleges and schools within the university (All).
11. IT/EITA/ICT and library personnel **learn to implement digital accessibility standards** (All).

It is of the utmost importance to ensure individuals have learning opportunities and TA designed and delivered using evidence-based practices. The six steps/phases of this process are as follows:

1. Ask a well-built question (Schlosser, Koul, & Costello, 2007).
 - a. **Example:** What specific training do staff members need to build knowledge, skills, and competencies in understanding/differentiating between AEM, accessible technology, and AT?
2. Select evidence source(s) (e.g. textbooks, research databases, journals, professional experiences, etc.)
 - a. **Example:** Look for literature on adult learning strategies, UDL practices, etc.
3. Search the literature (Schlosser & Sigafoos, 2009; Schlosser, Wendt, Angermeier, & Shetty, 2005)
 - a. **Example:** Read/Review resources found in Step 2.
4. Examine the evidence systematically (Schlosser, Wendt, and Sigafoos, 2007)
 - a. **Example:** Synthesize the information. Consider the source of the content, the number of individuals included in the study (if applicable), the relevance of the participants in the study to the group who needs training, validity/reliability of the data, etc.
5. Apply the evidence to make decisions on behalf of the specific individual(s) who need training and TA on AEM, accessible technology, and AT.
 - a. **Example:** Organize and prepare for the training considering audience, format/training strategies (e.g. distance learning, training modules, webinars, in-person training, one-on-one coaching, etc.), learning outcomes/objectives of the training content, accessibility, etc.
6. Evaluate the outcome of the decisions over time.
 - a. **Example:** Provide a survey/evaluation for immediate feedback and provide additional learning resources and opportunities for two-way communication/coaching to occur following the training. Adjust future training plans based on the desired outcome and progress seen in the topic area addressed.

Key findings from Bruce Joyce and Beverley Showers, 2002, *Designing Training and Peer Coaching: Our needs for learning* explain that "Training consists of four main components: developing knowledge through exploring **theory** to understand the concepts behind a skill or strategy; the **demonstration** or modelling of skill; the **practice** of skill and peer **coaching**." Professional development outcomes show a much higher transfer of knowledge to practice (99%) when all of these components are included.

Remember also to have training and TA:

- Occur in the environment/context the individual is in as possible (e.g. on the job, in the home, at school, etc.)
- Address learner variability, including the accessibility of the training and TA materials (e.g., using the UDL framework).
- Build upon state/local/university/institutional initiatives for improving teaching and learning with technology in multiple settings (e.g., in-person, hybrid, or remote).
- Engage families/caregivers as essential partners, as applicable, including ways that individualize supports for families/caregivers who need accessible materials, accessible technology, and AT.
- Be informed by data collection and use and adjust plans as necessary (see Quality Indicators 5 & 6).

There are numerous federally-, state-, and locally-funded sources of high-quality content, training, and TA. Oklahoma ABLE Tech provides professional development and TA to LEAs, institutions of HE, state agencies, job seekers, counselors/coaches, families, individuals with disabilities, etc. Other AEM sources, such as the National AEM Center, Bookshare, Learning Ally, etc., also provide extensive training and support on their websites.

Oklahoma ABLE Tech provides information and assistance, consultation, training, and TA to guide individuals and entities in determining the most appropriate sources of AEM, accessible technology, and AT. Oklahoma ABLE Tech also refers to other available resources for professional development and TA on how to acquire accessible formats of materials, instruction in reading/transcribing/teaching braille, best practices for transition, web accessibility, AT, etc.

- [ABLE Tech Education Services for PK-12 webpage](http://okabletech.org/education-services/at-services-for-pk-12): okabletech.org/education-services/at-services-for-pk-12
- [ABLE Tech Resources on Information and Communication Technology \(ICT\) Accessibility webpage](http://okabletech.org/guide-to-all-services/ict-accessibility/resources-information-technology-accessibility): okabletech.org/guide-to-all-services/ict-accessibility/resources-information-technology-accessibility
- [Accessibility for Advanced Technological Education \(AccessATE\) website](http://accessate.net): accessate.net
- [Assistive Technology Industry Association \(ATiA\) website](http://atia.org/learning-center): atia.org/learning-center
- [National Network Information, Guidance, and Training on the ADA website](http://adata.org): adata.org
- [AIM Center at the Oklahoma Library for the Blind and Physically Handicapped website](http://olbph.org/AIM): olbph.org/AIM
- [Bookshare Learning Center website](http://bookshare.org/cms/help-center/learning-center): bookshare.org/cms/help-center/learning-center
- [Center for Parent Information & Resources website](http://parentcenterhub.org): parentcenterhub.org
- [Center on Inclusive Technology & Education Systems \(CITES\) website](http://cites.cast.org): cites.cast.org
- [Center on Online Learning and Students with Disabilities website](http://centerononlinelearning.res.ku.edu): centerononlinelearning.res.ku.edu
- [Center on Technology and Disability website](http://ctdinstitute.org): ctdinstitute.org
- [Deaf/Blind Technical Assistance Project website](http://ou.edu/education/edpy/special-education/deaf-blind-project): ou.edu/education/edpy/special-education/deaf-blind-project
- [Decoding Dyslexia Oklahoma website](http://decodingdyslexiaok.org): decodingdyslexiaok.org

- [Early Childhood TA Center \(ECTA\) website](http://ectacenter.org): ectacenter.org
- [Hadley Institute for Professional Studies website](http://hadley.edu/braillecourses.asp): hadley.edu/braillecourses.asp
- [IRIS Center](http://iris.peabody.vanderbilt.edu): iris.peabody.vanderbilt.edu
- [Job Accommodation Network \(JAN\) website](http://askjan.org): askjan.org
- [Learning Ally Solutions for Schools website](http://learningally.org/Solutions-for-School/Professional-Learning): learningally.org/Solutions-for-School/Professional-Learning
- [Liberty Braille website](http://libertybraille.com): libertybraille.com
- [Designing for Accessibility with POUR](http://aem.cast.org/about/new-educator-training.html) including webinars, online courses, publications, and online learning series: aem.cast.org/about/new-educator-training.html
- [National Center for College Students with Disabilities \(NCCSD\) website](http://nccsdtrainingcenter.weebly.com): nccsdtrainingcenter.weebly.com
- [National Center for Systemic Improvement \(NCSI\) website](http://ncsi.wested.org): ncsi.wested.org
- [National Center on Accessible Educational Materials website](http://aem.cast.org): aem.cast.org
- [National Instructional Materials Access Center \(NIMAC\) website](http://nimac.us): nimac.us
- [National TA Center on Transition \(NTACT\) website](http://transitionta.org): transitionta.org
- [Office for Civil Rights website](http://www2.ed.gov/about/offices/list/ocr/frontpage/faq/crt-ta.html): www2.ed.gov/about/offices/list/ocr/frontpage/faq/crt-ta.html
- [Oklahoma Association on Higher Education and Disability \(OK-AHEAD\) website](http://ahead-ok.org): ahead-ok.org
- [Oklahoma State Department of Education website](http://sde.ok.gov/professional-development-directory): sde.ok.gov/professional-development-directory
- [PEAT website](http://peatworks.org): peatworks.org
- [Perkins School for the Blind eLearning website](http://perkinselearning.org): perkinselearning.org
- [Paths to Literacy, Free Online Resources to Learn Braille website](http://pathstoliteracy.org/resources/free-online-resources-learn-braille): pathstoliteracy.org/resources/free-online-resources-learn-braille
- [WebAIM website](http://webaim.org): webaim.org
- [Youth TA Center \(YTAC\) website](http://y-tac.org): y-tac.org

Guiding Questions and Exemplars for States or Districts Implementing Quality Indicator 4

4.1: How is your state or district using in-state learning opportunities to improve AEM service delivery?

Exemplar 4.1.1: Indiana’s [PATINS](#) project (Promoting Achievement through Technology and Instruction for all Students) is a statewide technical assistance network. Funded by the Indiana Department of Education and Administration, [PATINS has a team of specialists](#) that provides training on a variety of access-related topics. See [PATINS Professional Development Guide](#) for a list of in-person trainings and webinars that are available year-round to Indiana educators. PATINS staff hold [office hours in Second Life](#) the last Wednesday of each month. People outside of Indiana can take advantage of

self-paced courses on [PATINS iTunes U](#), learn anytime on [PATINS YouTube channel](#), and participate in [PATINS weekly Twitter chat](#).

Exemplar 4.1.2: Ohio's Assistive Technology & Accessible Educational Materials Center (AT&AEM Center) has a web page dedicated to [AEM Learning Opportunities](#). The [Braille Excellence for Students and Teachers \(BEST\) Grant](#) is a free training program in braille literacy, braille instruction, braille materials, and braille technology in Ohio schools. [Assistive Technology Internet Modules \(ATIM\)](#) are available at no cost to people inside and outside of Ohio.

4.2: How is your state or district using the National AEM Center as a source of learning opportunities to improve AEM service delivery?

The AEM Center is funded by the U.S. Department of Education to support educators and families with acquiring and using accessible materials and technologies. By now, you are likely very familiar with the AEM Center website. Here are some ways your state or district can mix the Center's content into structured learning opportunities for staff:

Exemplar 4.2.1: Organize practice groups around the [five-part AEM Online Learning Series on Accessible Materials & Technologies](#). Once staff members are proficient in a topic, they can serve as peer experts. Montgomery County Public Schools in Maryland used this resource to offer its own credit-bearing learning opportunity for teachers. Ysleta Independent School District in El Paso, Texas even created a digital badge system for staff to track their progress toward completing the five modules.

Exemplar 4.2.2: Create a [jigsaw activity](#) for an in-service day by assigning sections of the AEM Center website for study. We recommend [What is Accessibility?](#), [Designing for Accessibility with POUR](#), [Vetting for Accessibility](#), [Personalizing the Reading Experience](#), and [Teaching with Accessible Video](#).

Exemplar 4.2.2: Create a [jigsaw activity](#) for an in-service day by assigning sections of the AEM Center website for study. We recommend [What is Accessibility?](#), [Designing for Accessibility with POUR](#), [Vetting for Accessibility](#), [Personalizing the Reading Experience](#), and [Teaching with Accessible Video](#).

- For IEP teams: [Decision-Making & Students Who Need Accessible Formats](#)
- For staff who want to move from PDF to EPUB creation: [Reading for All, Part 1: Getting to Know EPUB](#)
- For staff who want to learn about creating accessible content:
 - [Creating High-Quality and Accessible Video](#)
 - [Creating Accessible Documents and Slide Decks](#)
 - [Making Math Notation Accessible](#)
- For staff who want to teach with accessible content:
 - [Personalizing the Reading Experience](#)
 - [Personalizing the Writing Experience](#)

Exemplar 4.2.4: Offer your own staff training. All of the slide decks that accompany the AEM Center’s recorded webinars have a Creative Commons license that allows you to reuse, adapt, and remix for your own purposes. Enhance your presentation with one or more AEM Center videos:

- [Designing for Accessibility](#)
- [Simply Said: Understanding Accessibility in Digital Learning Materials](#)
- [Baily's Story](#)
- [Juna’s Story](#)

Exemplar 4.2.5: Coordinate shared reading groups based on an AEM Center article. We recommend:

- [Accessible Educational Materials and Technologies in the IEP](#)
- [Procuring Accessible Digital Materials and Technologies for Teaching and Learning: The What, Why, Who, and How](#)
- [Audio-Supported Reading](#)
- [Open Education Resources: Ensuring Inclusive Learning in Uncertain Times](#)
- [The Right of Students with Disabilities Who Need Accessible Educational Materials](#)
- [The Potential Benefits of Accessible Digital Materials for Students Who Are Deaf of Hard of Hearing](#)

Quality Indicator 5: A systematic data collection process

Statement: The entity develops and implements a secure, systematic data collection process to monitor and evaluate the equitable, timely procurement, provision and use of high-quality AEM, accessible technology, and AT.

Intent: Secure data collection processes include the procurement, provision, and use of high-quality AEM, accessible technology, and AT for all individuals with disabilities served. Data collected also includes information on satisfaction with the quality and effectiveness of materials, accessible formats, accommodations, and technology provided, and represents the demographics of all individuals served in an effort to monitor for disproportionality.

Best practices are for entities to have methods for securely collecting data on the:

- **Procurement** of accessible materials, accessible technology, and AT should be in place and monitored through an inventory of digital materials and technologies to ensure they comply with accessibility laws/guidelines/policies. Maintaining records of communication with vendors regarding product accessibility is also important.
- Tracking the timely **provision and use** of high-quality accessible materials, accessible technology, and AT.
- Types of **alternative formats and accommodations** being provided/used to determine if there is an over/underrepresentation of certain formats and accommodations in service delivery.
- **Disproportionality** of service delivery (e.g., number of individuals receiving AEM, accessible technology, and AT compared to all individuals served, disability categories represented, demographic details of recipients/families/caregivers, variety in types of alternative formats and accommodations provided and the sources of those formats, etc.).
- **Satisfaction** results received on the quality and effectiveness of the accessible materials, accessible technology, and AT provided (e.g., Was the individual able to acquire the same information with ease, engage in the same interactions, and benefit from the same services as individuals without disabilities who are not using AEM, accessible technology, and AT?).

Other considerations regarding data collection systems include tracking training opportunities: the AEM, accessible technology, and AT training topics addressed, the representation of participants from all stakeholder levels within an entity (e.g. faculty/staff/students, family members, counselors/coaches, educators/related service providers/administrators, etc.) in those trainings, and survey/evaluation feedback.

The data collection system may be a simple spreadsheet, or a more robust database, depending on the needs and available resources of the entity.

Guiding Questions and Exemplars for States or Districts Implementing Quality Indicator 4

5.1: What information does your state or district collect to determine if students who need accessible materials and technologies are receiving them in a timely manner?

Exemplar 5.1: The [Florida Instructional Materials Center for the Visually Impaired \(FIMC-VI\)](#) is a statewide resource center that assists schools in obtaining accessible formats of print and other materials for students with visual impairments. In this central role, FIMC-VI provides the state and districts with vital data on multiple areas related to the availability and use of accessible materials in their schools. For timely manner, FIMC-VI's database tracks accessible formats of materials from the time they are ordered to the time they are delivered to the student.

5.2: What information does your state or district collect to determine if the use of accessible materials and technologies is having a positive impact on student learning?

Exemplar 5.2: Knowing if students are receiving accessible materials and technologies in a timely manner is relatively straightforward compared to knowing if that access is resulting in improved learning outcomes. But the latter is where the rubber meets the road, right? What information will provide your state or district with the insights it needs?

FIMC-VI coordinates with the Florida Department of Education to collect a range of student data by disability category per district, such as enrollment, achievement data on statewide assessments, and exit data. See the exemplar for Guiding Question 6.1 to learn how FIMC-VI uses these data to determine if accessible materials and technologies are having an impact on student learning.

5.3: What information does your state or district collect to determine if the learning opportunities and technical assistance provided to staff are improving access to learning for students who need accessible materials and technologies?

Exemplar 5.3: Indiana's [PATINS](#) project (Promoting Achievement through Technology and INstruction for all Students) is a statewide technical assistance network. PATINS engages eight school districts annually through its [AEMing for Achievement Grant](#) program. The goal is for each district to increase the achievement of students with disabilities through improved acquisition and use of accessible materials and technologies. At the beginning of the school year, PATINS staff works intensively with each district to conduct a needs assessment based on the Quality Indicators, develop an action plan, and implement data collection strategies. Each district reports the following information on a monthly basis:

- The percentage of students on track to receive a diploma
- The number of students identified who need accessible materials

- The number of minutes students spend outside of the classroom due to disciplinary action
- The availability of written policies on accessible educational materials
- An example of how the grant has impacted a student or group of students who need accessible materials

Through conducting a case study of a selected student throughout the year, each district also tracks assessment results and records learner testimonials.

Quality Indicator 6: Use of data to guide changes

Statement: Entities have a plan for the secure use of data to guide changes for continuous improvement in all areas of the systemic procurement, provision, and use of high-quality accessible materials, accessible technology, and AT.

Intent: While protecting individuals' privacy, data are systematically analyzed to measure effectiveness of all areas of the system and are used to inform actions needed to improve practice, program planning, and resource allocation.

- Data collected regarding **procurement of** accessible materials, accessible technology, and AT are used by an entity to guide/inform procurement activities resulting in an increase in the number of market-available, accessible digital materials, accessible technology, and AT procured by the entity. Over time it is expected that the number of market-available, accessible digital materials, accessible technology, and AT procured would be sustained.
- Data used to monitor the **efficiency** with which **high-quality accessible formats of materials** are provided to individuals who need them are used to identify and correct delays in timely manner and/or technical issues with the quality of accessible formats provided resulting in consistent, timely provision of high-quality accessible formats of materials being provided to individuals who need them.
- Data collected on the **provision and use** of accessible materials, accessible technology, and AT are used to identify and correct problems individuals may experience when using accessible formats of materials, such as environmental issues or lack of training to use the related resources, resulting in prioritized improvements in the procurement, selection, and creation of accessible materials and technologies used.
- Data collected on student **demographics**, including disability category, are used to determine the extent to which an entity is equitably serving individuals with disabilities to prevent the **disproportionality** of services rendered, resulting in equitable service provision, with an appropriate range of types and sources of accessible formats being acquired/provided/used.
- Entities should **consider the potential impact of barriers** for individuals with disabilities when analyzing data. See the following examples of considerations in the various EC, K-12, HE, and WFD environments:
 - For a young child who is not meeting developmental milestones (e.g. in language and communication, emergent reading/writing skills, etc.), a team considers whether the formats of the materials or the design of the learning tools (including those used for assessment as applicable), are presenting functional barriers (e.g. physical, sensory, or perceptual).
 - For a child presenting behavioral challenges, a team considers whether functional barriers to materials used for social and learning activities are interfering with access and, thereby, interfering with efforts to promote Positive Behavioral Interventions and Supports (PBIS).
 - For data indicating that a student is not making expected progress in subject areas, a team considers whether the formats of curriculum materials or the design of educational technologies used for teaching, learning, and assessment are presenting functional barriers (e.g. physical, sensory, or perceptual).

- For data indicating that a student is experiencing suspension, expulsion, or risk of dropping out, a team considers whether functional barriers to materials and technologies are interfering with efforts to promote PBIS.
- For data indicating low retention and program completion rates, the entity investigates whether the formats of accessible materials or the design of technologies used for teaching, learning, and assessment are presenting functional barriers (e.g. physical, sensory, or perceptual).

Entities should have a systematic approach that supports effective data analysis and use. Parts of a systematic approach include:

- Training for personnel conducting analyses to ensure accuracy and consistency
- Alignment of analyses with purposes of the quantitative and qualitative data collected
- Methods that protect the identity of individuals served
- Timelines for implementation of data driven decisions
- Identification of target audiences with whom aggregated summaries of the data analysis will be shared

Each entity should **assemble a team** consisting of personnel with the combined expertise and authority to synthesize the data, make recommendations, and implement necessary changes.

Once aggregated summaries of data analysis have been completed, entities should employ confidentiality and disseminate results to all stakeholders at all levels (e.g. faculty/staff/students, family members, counselors/coaches, educators/related service providers/administrators, etc.), in user-friendly, accessible formats.

Data should be analyzed at regular intervals (e.g. once per year) and used to guide changes needed to improve efficiency/effectiveness of services, future practices, program planning, and allocation of human, fiscal, and infrastructure resources.

Guiding Questions and Exemplars for States or Districts Implementing Quality Indicator 6

6.1: How is your state or district using data to correct delays to timely manner?

Exemplar 6.1: As introduced in [Guiding Question 5.1](#), the [Florida Instructional Materials Center for the Visually Impaired \(FIMC-VI\)](#) is a statewide resource center that assists schools in obtaining accessible formats of materials for students with visual impairments. FIMC-VI's database tracks accessible formats of materials from the time they are ordered to the time they are delivered to the student, allowing for the identification of sources of delay. FIMC-VI uses the data for accountability purposes (e.g., transcribers, vendors, in-house production, shipping); identifying needs for learning opportunities and technical assistance; and predicting future material purchases. Because transparency is important to FIMC-VI, the data are shared with stakeholders.

6.2: How can your state or district use the data points you selected in Guiding Question 5.2 to determine if accessible materials and technologies are having a positive impact on student learning?

Exemplar 6.2: FIMC-VI coordinates with the Florida Department of Education to collect a range of student data by disability category per district, such as enrollment, achievement data on statewide assessments, and exit data. FIMC-VI disaggregates those data for multiple purposes, including to:

- Provide technical assistance to districts that over- or under-identify students who need accessible materials,
- Correlate student enrollment to orders of accessible formats of materials, and
- Correlate student achievement to orders of accessible formats of materials.

6.3: As explained in Guiding Question 5.3, how can your state or district use the data points you selected to determine if the learning opportunities and technical assistance provided to staff are improving access to learning for students who need accessible materials and technologies?

Exemplar 6.3: As explained in [Guiding Question 5.3](#), Indiana's [PATINS](#) project engages eight school districts annually through its [AEMing for Achievement Grant](#) program, a statewide professional learning opportunity. Aligned with their action plans, districts use a common monthly data form to track indicators of student progress (e.g., achievement and retention), confirm the use of written guidelines, and collect anecdotal information (e.g., learner testimonials). With student privacy protections in place, these data are shared with targeted stakeholders and used throughout the year to determine if the action plan and related training strategies are having the intended impact and, if not, to make changes in practice, program planning, and resource allocation.

Quality Indicator 7: Allocation of resources

Statement: The entity allocates resources sufficient to ensure the delivery and sustainability of quality services for individuals who need high-quality accessible materials and technologies, as well as their families/caregivers/support systems.

Intent: Sufficient fiscal, human, and infrastructure resources are committed to ensure that the needs of individuals who need high-quality accessible materials and technologies are effectively met.

To effectively address resource allocation, the following components should be present:

1. Resources that are provided for human, fiscal, and infrastructure needs. Examples include:
 - **Human:** Training and technical assistance informed by local needs
 - **Fiscal:** Coordinating and braiding of funds as permitted (e.g. combining leveraged funds, grant/contractual dollars, etc.)
 - **Infrastructure:** Supporting an inclusive technology infrastructure at the local level (e.g., the purchase and maintenance of digital materials and technologies that are interoperable with AT)
2. Resources that are used to address the needs of all stakeholders, including all individuals with disabilities being served

Appropriate allocation of resources will help to ensure the delivery and sustainability of quality services to individuals with disabilities who need accessible materials, accessible technology, and AT.

This technical assistance document provides guidance to help entities develop systems that satisfy the AEM Quality Indicators.

[View additional guidance and resources for addressing each indicator](https://aem.cast.org/policies/quality-indicators-provision-aem.html#.XQp_Xo97IPY) from the CAST website: aem.cast.org/policies/quality-indicators-provision-aem.html#.XQp_Xo97IPY

Guiding Questions and Exemplars for States or Districts Implementing Quality Indicator 7

7.1: How is your state or district leveraging available resources?

Exemplar 7.1.1: Districts benefit from learning what services their state has developed to help with acquiring accessible materials and allocating resources. For example, each state has partial to robust systems for converting print materials to accessible formats for eligible students. Known as Instructional Materials Centers or Instructional Resource Centers (IMCs or IRCs), these are services that commonly produce braille and large print materials, formats that are time-consuming to produce and require highly skilled personnel.

For example, Oklahoma districts benefit from the services provided by Liberty Braille and the AIM Center located at the Oklahoma Library for the Blind and Physically

Handicapped. Districts in Texas benefit from the Texas Education Agency's investment in the [Instructional Materials Division](#), which provides support and coordination in the review, adoption, and distribution of state-adopted instructional materials. State-adopted accessible instructional materials, including braille, large-print, audio, and digital formats, are provided free of charge to eligible students, and the cost of these state-adopted accessible instructional materials is not deducted from the technology and instructional materials allotment. However, if a district or open-enrollment charter school chooses to purchase accessible instructional materials that are not state-adopted, they are responsible for the cost of the materials and may use allotment funding to pay for them. The Instructional Materials Division also contracts with Bookshare to provide extra support to districts and Learning Ally to provide free memberships for eligible students statewide as well as extra technical assistance. The US Department of Education provides free membership for eligible students for Bookshare.

Exemplar 7.1.2: Accessibility needs to be addressed in not only the content students are going to learn and be assessed on, but also the devices and technology they will use to consume that content. To that end, some students will need assistive technology (AT). Similar to programs for converting materials to accessible formats, states have wide-ranging services related to AT. A common beneficial resource offered by states is an AT loan program, which allows educators to borrow devices for student trial or evaluation purposes. See Oklahoma ABLE Tech's [Device Loan Program](#), Ohio's [OCALI Lending Library of AT](#), [Indiana's PATINS AT Lending Library](#), and [Florida's AT & UDL Loan Library](#) for examples. There is an AT Act Program in every state and one of their required activities is to operate a device loan program.

7.2: How is your state or district integrating accessibility of materials and technologies into resource allocation planning?

Exemplar 7.2: Grant Wood Area Education Agency (GWAEA) in Iowa allocates resources to "increase educator capacity to bring equity and accessibility to learning through technology, resources, and innovative practices." To support this goal, GWAEA supports an [AT team](#), [access to AT devices](#), and [professional learning opportunities](#) that include training in accessibility for all learners.

05 | How to Meet the AEM and Technology Needs of Individuals in All Environments

The following section details the process for consideration, assessment, selection, acquisition, provision, and use of accessible formats, accessible technology, and AT.

1. Considering Needs/Abilities in all Environments
2. Gathering Information and Data through Assessment Strategies
3. Making Decisions/Selecting Needed Accessible Formats, Accessible Technologies, and AT
4. Acquiring/Providing/Documenting Needed Accessible Formats, Accessible Technologies, and AT
5. Implementing/Monitoring Progress

Step 1. Considering Needs/Abilities in all Environments

This section includes specific information related to the consideration of AEM for individuals with disabilities in all environments of EC, K-12, HE, and WFD. There are multiple decision-making processes that can assist teams in considering the needs of individuals. The National AEM Center has developed one such process inspired/informed by Joy Zabala's SETT (Student, Environments, Tasks, and Tools) Framework. Joy Zabala developed the SETT Framework to assist individuals in considering the need for AT. This framework can be used in a similar way to help individuals in considering the need for AEM. For those individuals who are not necessarily "students", the HAAT (Human, Activity, Assistive Technology) Model can be used. In all cases, emphasis is on observing the needs of the individual, where they need access to educational materials, what tasks/activities they seek to participate in, and what tools may work best in those circumstances. Oklahoma ABLE Tech also has experienced staff who are able to consult with individuals during the consideration process (and beyond) to help individuals with disabilities of all ages, in all environments match with appropriate accessible formats and technologies.

The National AEM Center denotes three possibilities when determining an individual's need for accessible formats and technologies:

1. Evidence shows that the individual can read/access information from the same text-based materials in the same format used across environments by peers.
 - a. In this case, accessible formats are not needed at this time.
2. Evidence shows that the individual is experiencing difficulty reading/accessing some or all text-based materials due to the formats used. The team anticipates that the individual will make adequate progress if exactly the same information is presented in one or more accessible formats and technologies.
 - a. In this case, one or more accessible formats are needed at this time.
3. Evidence shows that the individual needs modified content, such as a lower reading level or a change in what the individual is expected to learn.
 - a. In some cases, an individual may need modified content in an accessible format(s) and technology.
 - b. The team determines whether the individual needs modified content only, or a combination of modified content and accessible format(s) and technology.

[View additional information from the National AEM Center:](http://aem.cast.org/acquire/determining-prek-12-learners-need)
aem.cast.org/acquire/determining-prek-12-learners-need

EC Considerations

For children with disabilities (visual, hearing, physical, developmental, etc.) AEM, accessible technology, and AT can assist with meaningful participation in early learning/daily activities. These supports can help with skill development related to literacy, socialization, communication, and self-help. Families, early intervention service providers, and eventually school personnel, should all be involved in the development and implementation of

supports. These supports are to be individualized to the child and should be included as a part of the child's Individualized Family Service Plan or IFSP (if receiving SoonerStart Early Intervention Services).

For an infant or toddler with a disability, consider providing rich exposure to language and literature during early learning/daily routines; through music and movement; when outdoors and on-the-go; during play, bath, meal, and snack time; when in the grocery store, and while taking a walk by:

1. Singing songs, reciting rhymes, playing naming games, and talking to the child
2. Playing songs or lullabies
3. Providing toys and musical instruments like rattles (or pots and pans!)
4. Blowing bubbles and pretend playing with puppets or stuffed animals
5. Providing opportunities and access to reading materials:
 - a. Placing braille labels on items around the home/daycare/classroom (for children who are blind or visually impaired)
 - b. Reading aloud using books with both braille (for children who are blind or visually impaired) and print
 - c. Letting the child turn the pages of a book using their hands/other body parts while using AT solutions (Ex. popsicle sticks, paper clips, page fluffers, etc.) as needed
 - d. Using books that have texture, or adding texture (using Wikki Stix), and sound/sound effects
 - e. Having the child listen to/follow along with electronic/digital books or books read via video with closed captions as a tool for early exposure to print.
 - f. Giving the child real items that represent items read
6. Providing opportunities and access to drawing and writing materials

[View additional ideas from the Center for Early Literacy Learning \(CELL\) website:](http://earlyliteracylearning.org/ta_cell_pop1.php)
earlyliteracylearning.org/ta_cell_pop1.php

For infants and toddlers who have disabilities that create barriers to the above opportunities, there may be an AT solution that would provide access and more independent participation.

AT solutions for infants and toddlers include:

- foam wedges, rolled towels/blankets, or swim noodles used for positioning
- switch-operated CD players, musical instruments, toys, bubble blowers, etc.
- laminated picture boards
- specialized drinking cups
- adapted utensils (spoons, forks, etc.)
- cuffs for holding utensils and toys

- augmentative and alternative communication (AAC) devices
- wheelchairs
- walkers
- and more!

[View more information from Early Childhood Technical Assistance Center \(ECTA\):](http://ectacenter.org/topics/atech/atech.asp)
ectacenter.org/topics/atech/atech.asp

Note: According to IDEA, all children who are eligible to receive special education or early intervention services are also eligible to receive AT, if it is included as part of the IEP or IFSP respectively.

Children with disabilities, even those who are not eligible for special education under IDEA, may also be entitled to the provision of AT under Section 504 of the Rehabilitation Act or under the ADA.

ECTA sums this up well when it states:

As the child transitions from an early intervention program at age three, AT should be discussed at the transition planning conference (34CFR §303.209(c)) and should be included on the child's IEP. Issues regarding the ownership and/or portability of AT devices from one setting to the next need to be addressed early on, in order to ensure that there is no interruption in the use of these devices if they are deemed necessary for the child to receive a free appropriate public education (FAPE) under Part B of IDEA. This is an especially important issue to consider if agencies other than the school system have purchased the AT device under Part C.

View more information from [Early Childhood Technical Assistance Center \(ECTA\):](http://ectacenter.org/topics/atech/atech.asp)
ectacenter.org/topics/atech/atech.asp

K-12 Considerations

Considering a student's need for AEM, includes discussing accessible format(s) required (audio, tactile, digital, or large print), documenting eligibility (blindness or visual impairment; physical disability; and/or reading disability), and plans for acquiring accessible format(s) needed in the IEP or 504 plan.

See examples of "Below Minimum", "Minimum", and "Quality" practices related to considering needed AEM and AT for students with disabilities:

Below Minimum Practice	Minimum Practice	Quality Practice
LEA does not consider AEM/AT for every student on IEP.	LEA considers AEM/AT for every student on IEP.	LEA considers AEM/AT for every student with a disability.

<p>LEA does not provide AEM/AT for every student who needs it.</p>	<p>LEA provides AEM/AT for every student who needs it.</p>	<ul style="list-style-type: none"> • LEA provides AEM/AT for every student who needs it. • LEA assists families in obtaining individual AMP memberships for qualified students.
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Consideration should occur at the initial, interim, and subsequent IEP. Documentation should include applicable diagnoses and decisions related to need and provision of AEM. This information can be included under Special Education, Related Services, and/or Supplementary Aids and Services in the IEP.

Students with a variety of disabilities may need AEM. Students who could otherwise understand the content, but are unable to use standard materials may need to access that content through accessible formats which include audio, tactile, digital, and large print. When considering a student's possible need for an accessible format, the IEP team should consider the student's sensory, physical, and cognitive capabilities; reading skills; classroom performance; levels of academic proficiency; and grades in all subject areas.

- [AEM Center: AEM in the IEP](http://aem.cast.org/get-started/resources/2021/aem-in-the-iep): aem.cast.org/get-started/resources/2021/aem-in-the-iep

Specific questions the team might ask include:

- Can the student see the material well enough to read on a level comparable to other classmates?
- Can the student physically manipulate the material with comparable effort as his or her peers?
- Does the student have the necessary stamina to read standard materials for extended periods of time?
- Does the student have the decoding, fluency, and comprehension skills needed to gain information from grade- level printed materials?

Answering "no" to any of these questions might indicate that a student meets eligibility requirements and needs AEM. If there are cognitive concerns as well, the student may need modified materials in an accessible format.

If it is determined that a student is unable to comprehend standard educational materials, then the IEP team should determine which accessible format will best enable the student to access information contained in the standard materials. (Note: See section 2 of this guide for descriptions of the accessible formats.) The chosen format(s) should help the student to develop literacy skills, actively participate in educational activities, and work as independently as possible and make progress in the general education curriculum. The student's preferences, vision, memory, listening skills, tactile skills, and language, including English proficiency, should also be considered.

Students may require more than one format depending on their needs, the instructional materials, and the environments in which they will access the text. For example, a student with a visual impairment may use a large print textbook for math, digital textbooks for

history and language arts, and audio for assigned novels. If, following consideration and discussion, the team needs additional information to determine whether AEM, accessible technology and AT may be needed, an assessment will be necessary to answer further questions.

HE Considerations

Several different laws apply for individuals needing accessible formats, accessible technology, and AT in HE environments and resources differ, but the SETT Framework can still be used to walk through the consideration process.

For individuals in HE environments who have already been using accessible formats and accessible technology or AT, these may transition well for use in HE environments. The same SETT Framework can be used to reconsider the individual's AEM and technology needs; however, the individual plays a much larger role in advocating that their needs be met in HE environments. The Department of Rehabilitation Services (DRS) counselors and Student Disability/Accessibility Services may be great supports and resources. For professors/lecturers to be made aware of a student's needed instructional/testing accommodations including accessible formats, accessible technology, and AT, students will be required to self-identify their needs by contacting Student Disability/Accessibility Services.

For individuals in HE environments who have not previously been using accessible formats, accessible technology, or AT and for those who acquire a disability while in HE environments, DRS may be a great support and resource for helping with the consideration process. Specific DRS services are determined as a part of an overall employment outcome.

Depending on the specific disabling condition(s), the environments (e.g., in-person lectures and labs, virtual classes, etc.), the tasks (e.g., researching, writing papers, taking tests, giving presentations, etc.), and the tools the student has access to, the individual may have AEM supports already built-in to existing technology (e.g., smartphone, computer, and tablet features/apps/extensions).

For HE institutions: Consider analyzing low retention and graduation rates/data to determine the potential impact of barriers for students with disabilities. The results may indicate needed changes in the formats and design of materials and technologies used for teaching, learning, and assessing.

View more information from the National AEM Center: [AEM Quality Indicators with Critical Components for Higher Education \(PDF\)](https://aem.cast.org/binaries/content/assets/common/publications/aem/he-aem-qualityindicators-critical-components.pdf):
aem.cast.org/binaries/content/assets/common/publications/aem/he-aem-qualityindicators-critical-components.pdf

WFD Considerations

Several different laws apply to job seekers and those who are employed who need accessible formats, accessible technology, and AT in work environments and resources differ, but the HAAT Model can still be used to walk through the consideration process.

For job seekers and individuals in work environments who have already been using accessible formats, accessible technology, or AT, these may be usable in work

environments as well. The HAAT Model can be used to reconsider the individual's AEM needs; however, the individual plays a much larger role in advocating that their needs be met in their work environment. DRS counselors can be great supports and provide needed services and resources.

For job seekers and individuals in work environments who have not previously been using accessible formats, accessible technology, or AT and for those who acquire a disability while in a work environment, DRS can be a great support and resource for helping with the consideration process. Specific DRS services are determined as a part of an overall employment outcome.

Depending on the specific disabling condition(s), the environments (e.g., construction site, office job, delivery route, etc.), the activities (e.g., reading/following instructions, reviewing content, taking notes/minutes.), and the tools the individual has access to, the individual may have AEM supports already built-in to existing technology (e.g., smartphone, computer, and tablet features/apps/extensions).

For employers: Consider analyzing staff retention and program completion rates/data to determine the potential impact of barriers for job seekers and employees with disabilities. The results may indicate needed changes in the formats and design of materials and technologies used for completing an application, training, and on-the-job responsibilities.

View more information from the National AEM Center [AEM Quality Indicators with Critical Components for Workforce Development \(PDF\)](https://aem.cast.org/binaries/content/assets/common/publications/aem/wf-aem-qualityindicators-criticalcomponents.pdf):
aem.cast.org/binaries/content/assets/common/publications/aem/wf-aem-qualityindicators-criticalcomponents.pdf

Step 2. Gathering Information and Data through Assessment Strategies

Once the consideration process has occurred, and it has been determined that additional information is required to make a decision about specific accessible formats and technologies needed, the team supporting the individual with a disability should proceed with completing an assessment/trialing accessible formats and technologies. The function of an assessment is to develop a shared understanding of the individual's needs/abilities, the environments in which the individual regularly participates, and the tasks/activities that are expected to be completed, and/or participated in, as an active member of the environment.

For additional support through this process, a [consultation form](https://okabletech.formstack.com/forms/able_tech_intake_form_long) is available from Oklahoma ABLE Tech's website: okabletech.formstack.com/forms/able_tech_intake_form_long

Assessment Strategies

A variety of assessment strategies are available to assist individuals and teams in gathering more information and determining which accessible format(s) and technologies may be needed.

- **Observations:** Watch the individual in natural settings in various activities. Note the participation patterns of peers. Compare work samples from the individual to those of peers.
- **Interactions:** Engage the individual in tasks similar to what is required in during play/learning/work. Create opportunities for the individual to try AT and/or modifications that might be helpful.
- **Interviews:** Ask the individual, family/caregiver/advocate, and other professionals specific questions regarding the needs, abilities, interests, and participation patterns of the individual.
- **Record Review:** Review past history, medical, or specialized assessment information.
- **Informal and Formal Tests:** Formal assessments are NOT required, but may be used when possible and applicable.
- **Protocols and Profiles:** Use pre-made forms teams use to record information about an individual's abilities and needs.
- **Trials:** Provide opportunities to use materials and technologies in an individual's customary environment to determine if they help the individual accomplish a task/activity that would otherwise be difficult or impossible to do without them.

The National AEM Center suggests individuals should trial a variety of accessible formats:

- Tactile formats, such as braille (hard copy and digital) and raised images
- Large print formats, which are hard copy materials with large text size

- Audio formats, such as human-narrated audio recordings
- Accessible digital formats such as
 - Accessible EPUB documents
 - Accessible web-based (HTML5) documents
 - Accessible Word documents
 - Accessible PDF documents (PDF/UA)
 - Accessible documents with MathML

Sources for Obtaining Accessible Formats

Sources for obtaining accessible formats for trials include the following (Note: Individuals must meet certain eligibility criteria to use some of the sources.):

- [ABLE Tech](http://www.okabletech.org) (NIMAC Authorized User, maintains AT inventory for use with accessible formats - serves individuals of all ages), 800.257.1705, website link: www.okabletech.org
- [The AIM Center at the Oklahoma Library for the Blind and Physically Handicapped](http://www.library.state.ok.us/aim) (maintains a central depository of braille, large print textbooks and other, specialized instructional materials for loan – serves individuals Pre-K – 12th grade and those receiving SoonerStart services), 800-523- 0288, website link: www.library.state.ok.us/aim
- [APH Louis Database of Accessible Materials](http://louis.apf.org) (contains information on accessible materials produced by over 100 organizations throughout the United States and Canada, educational materials are available in braille, large print, audio, and electronic file format.), website link: louis.apf.org
- [Bookshare](http://www.bookshare.org) (provides accessible formats of textbooks, literature, and other learning materials – serves individuals of all ages with qualifying print disabilities), 650-352-0198, website link: www.bookshare.org
- [Learning Ally](http://learningally.org) (provides audio formats of textbooks, literature, and other learning materials – serves individuals Pre-K – high school with reading and learning disabilities), 800-221-4792, website link: learningally.org
- [Liberty Braille](http://www.libertybraille.com) (provides large print and braille formats – serves K – 12th grade, organizations, and businesses assisting individuals who live with blindness or visual impairment), 800-920-3369, website link: www.libertybraille.com
- Locally Created Accessible Materials
- [National Library Service for the Blind and Physically Handicapped](http://www.loc.gov/nls) (provides braille and audio formats – serves individuals of all ages with qualifying print disabilities), website link: www.loc.gov/nls
- [Oklahoma School for the Blind](http://www.osb.k12.ok.us) (provides accessible formats of textbooks, literature, and other learning materials – serves individuals PreK – 12th grade living with blindness or visual impairment who attend the school), 877-229-7136, website link: www.osb.k12.ok.us
- Publishers

The following are commercial sources that may or may not be accessible:

- [Amazon Kindle](http://goo.gl/FbXA6w) (e-books for purchase), website link: <http://goo.gl/FbXA6w>
- [Audible](http://www.audible.com) (audiobooks for purchase), website link: www.audible.com
- [Open eBooks](http://www.openebooks.net) (free e-books), website link: www.openebooks.net
- [Open Educational Resources](http://www.oercommons.org) (public digital library of materials – serves individuals from preschool through adult education), website link: www.oercommons.org
- [OverDrive](http://www.overdrive.com) (e-books and audiobooks through public libraries), website link: www.overdrive.com
- [Project Gutenberg](http://www.gutenberg.org) (free public domain e-books), website link: www.gutenberg.org
- [VitalSource](http://vitalsource.com) (higher ed textbooks can be searched by accessibility metadata): vitalsource.com

Individuals, family members/caregivers, service providers, employers, etc. can borrow materials and AT for free from Oklahoma ABLE Tech to trial for 4 to 6 weeks in the individual's customary environments.

Teams who keep qualitative and quantitative data on abilities/needs and trials, will be better positioned to make informed decisions following the assessment/trialing process. Data that might be collected during instruction in the use of a format or during trial periods might include the amount of time it takes the individual to use each format option and the individual's level of independence in the use of each format.

EC and K-12

Infants and Toddlers

For infants and toddlers receiving services through Oklahoma's Early Intervention Program, SoonerStart, assessments and trials can be completed with assistance from SoonerStart personnel. Oklahoma ABLE Tech partners with Soonerstart to provide kits of accessible materials and AT to be used for demonstrations and assessments.

- View a complete list of [available SoonerStart and ABLE Tech services and demonstration items](http://www.okabletech.org/community/soonerstart-collaboration): www.okabletech.org/community/soonerstart-collaboration

For infants and toddlers not receiving services through SoonerStart, a variety of service providers may be able to assist the family/caregiver with the assessment/trial process.

- AT Specialists/Professionals
- Audiologists
- Child Development Specialists
- Nurses
- Occupational Therapists (OT)
- Physical Therapists (PT)
- Speech Language Pathologists (SLP)
- Teachers of the Visually Impaired (TVI)

Students (Ages: 3 through 21)

For students on an IEP or 504 Plan, those respective teams can assist with the assessment/trial process. The following interactive tools can be used by teams to help gather information and make decisions about AEM and technologies.

- View the [AEM Navigator](https://aem.cast.org/get-started/resources/2021/aem-navigator): aem.cast.org/get-started/resources/2021/aem-navigator
- View both the print and online versions of the [Protocol for Accommodations in Reading \(PAR\)/Universal Protocol for Accommodations in Reading \(uPAR\)](https://donjohnston.com/par): donjohnston.com/par

Additional assessment tools designed specifically for students with blindness or visual impairments are described in the Addendum: TVI Guide. Schools needing further assistance in assessing students who have visual impairments may request outreach services from the Oklahoma School for the Blind.

Independent Educational Evaluations (IEEs) may also be obtained, and results are to be considered by the team to determine next steps for meeting the student's need for AEM and technologies. Various professionals may be consulted for assistance with this process.

- AT Specialists/Professionals
- Audiologists
- Certified Academic Language Therapists
- Child Development Specialists
- Occupational Therapists (OT)
- Physical Therapists (PT)
- Reading Specialists
- Speech Language Pathologists (SLP)
- Teachers of the Visually Impaired (TVI)

HE

For students in Institutions of HE, assessments/profiles may be conducted different ways. For students who have been on an IEP and have a transition plan, DRS can assist with assessments and evaluations and provide access to AT for trials. Students who self-identify as an individual with a disability with Student Disability/Accessibility Services can get assistance with creating a profile of abilities/needs and can often gain access to some AT for trials through Student Disability/Accessibility Services. Students can also acquire services independently to assist with the assessment/trial process. Various professionals may be consulted for assistance with this process.

- AT Specialists/Professionals
- Audiologists
- Certified Academic Language Therapist
- Occupational Therapists (OT)
- Physical Therapists (PT)
- Speech Language Pathologists (SLP)

- Teachers of the Visually Impaired (TVI)

Individuals may also obtain accessible formats and AT for trial through Oklahoma ABLE Tech.

WFD

For job seekers and those in work environments who have disabling conditions, assessments/profiles may be conducted different ways. For individuals who have been on an I.E.P and who have a transition plan, DRS can assist with assessments and evaluations and provide access to AT for trials. Oklahoma WFD Boards have kits of AT that can be used for trial with various accessible formats. Individuals can also acquire services independently to assist with the assessment/trial process. Various professionals may be consulted for assistance with this process.

- AT Specialists/Professionals
- Audiologists
- Certified Academic Language Therapist
- Occupational Therapists (OT)
- Physical Therapists (PT)
- Speech Language Pathologists (SLP)
- Teachers of the Visually Impaired (TVI)

Individuals may also obtain accessible formats and AT for trial through Oklahoma ABLE Tech.

Step 3. Making Decisions/Selecting Needed Accessible Formats, Accessible Technologies, and AT

Once the assessment/trial process has occurred, and it has been determined that an individual requires specific accessible formats and technologies, the team supporting the individual with a disability should make final decisions and selections.

Making Decisions

Once information and data is gathered, it must now be utilized, but making unanimous decisions as a team can be very challenging. Having a prescriptive process can help team members know what to expect, understand their roles, and allow them to duplicate the steps while serving on other teams.

Roles and responsibilities during team meetings should be determined before starting and should be shared. In each team meeting, there should be at least one facilitator, a recorder, and a timekeeper.

What should team members bring to their meetings?

- The SETT/HAAT process and trial/data information that has been gathered
- Notetaking materials that allows all team members to see notes in real-time
- Pre-made forms and other resources that were used in gathering the information
- Web access as available to use online resources
- Knowledgeable person in their area of expertise as needed

Start by confirming the meeting's timeframe, make introductions, and provide an overview of the process that is about to take place. Let members know that all input will be written/typed and displayed. Encourage discussion, combine ideas, and prioritize/sequence next steps.

Select the format(s) the individual needs

Information about the individual's needs/abilities, as well as the results of assessments/trials, should be used when selecting the needed format(s).

Discuss pertinent questions

Discuss pertinent questions using data from trials regarding the amount of time it takes the individual to use each format and the individual's level of independence in using each format.

- What formats and specific features are most useful to the individual?
- Do different topics of information lend themselves to needing different formats/features?
- How might different environments impact the usefulness of certain formats/features?

View more guidance from the National AEM Center at CAST: [FAQ for selecting the format or combination of formats the learner needs](https://aem.cast.org/acquire/faq-selecting-formats): aem.cast.org/acquire/faq-selecting-formats

List the text-based instructional materials used in all applicable environments

The team gathers information about the text-based materials that the individual needs for access to all content across applicable environments. This includes print materials and digital materials with text and images. The team also collects information about known materials that the individual will need in the next six months.

View more guidance from the National AEM Center at CAST: [FAQ for listing instructional materials](https://aem.cast.org/acquire/faq-listing-instructional-materials): aem.cast.org/acquire/faq-listing-instructional-materials

Match formats to materials

For each text-based material needed by the individual, the team selects the appropriate format.

View more guidance from the National AEM Center: [FAQ for matching formats to materials](https://aem.cast.org/acquire/faq-matching-formats-materials): aem.cast.org/acquire/faq-matching-formats-materials

Step 4. Acquiring/Providing/Documenting Needed Accessible Formats, Accessible Technologies, and AT

Once decisions have been made and needed accessible formats, accessible technology, and AT have been selected, the materials and technologies must be acquired. Many of the sources that were used to trial accessible formats, accessible technology, and AT (See Step 2.) can be used to permanently acquire them. A considerable number of sources provide materials and technologies for free to eligible individuals, but often an individual may need alternative funding options. Funding resources often have eligibility criteria based on an individual's age, disability, and income. Below are some common sources for acquiring needed accessible formats, accessible technology, and AT:

- Oklahoma ABLE Tech's Device Reutilization Program and Financial Loan Program (provides for individuals of all ages, disabilities, incomes)
- Department of Rehabilitation Services (provides for individuals receiving services through the Oklahoma School for the Blind, Oklahoma School for the Deaf, Vocational Rehabilitation and Services for the Blind and Visually Impaired)
- Employers (provides for employees - under the ADA)
- Local Education Agencies (LEA) (provides for individuals Pre-K – high school – for students on IEPs under IDEA and for students on 504 Plans under the Rehabilitation Act.)
- Oklahoma State Department of Education (provides for individuals Pre-K – high school when the cost for provision would cause undue burden on an LEA)
- SoonerStart Early Intervention Services (provides for individuals birth – 3 when other resources are not available – under IDEA)

Additional resources and details can be found in [ABLE Tech's AT Funding Guide](https://okabletech.org/resources/at-funding-guide):
okabletech.org/resources/at-funding-guide

Providing Needed Accessible Formats, Accessible Technologies, and AT

Once materials and technologies are acquired, steps should be taken to ensure all of the accessible formats are set up for the individual for use with technologies as needed in all applicable environments. Remember, materials and technologies are to be provided in a "timely manner" which means individuals who require accessible materials and technologies receive them at the same time that materials and technologies are distributed to all others in a program (See Quality Indicator 2.). Comprehensive learning opportunities and technical assistance should be ongoing for the individual using the materials and technologies as well as all other stakeholders (See Quality Indicator 4.).

Documenting Needed Accessible Formats, Accessible Technology, and AT

At this point in the process much information has been collected on the individual's needs and abilities; data on trials with accessible formats and technologies have been captured; lists have been made to match formats to technologies for all environments; and materials

and technologies have been acquired and provided. For many reasons, including legal reasons, pertinent information about the process and outcomes need to be documented.

Documentation helps all stakeholders know:

- assessment results and present levels of performance
- details regarding which accessible formats and technologies meet the needs of the individual in all applicable environments
- what solutions (materials, devices, services, and training) have been - or will need to be - provided
- any goals or transition details that need to be addressed

EC and K-12

For children birth to age 3 receiving SoonerStart Early Intervention Services, the Individualized Family Service Plan (IFSP) is a great place to include various details related to abilities, needs, solutions, goals, and services. Oftentimes, goals for children at this age are broad and include access to the environment and reading materials. Families and caregivers will need to collaborate with SoonerStart service providers to ensure AEM needs and goals are documented appropriately on the IFSP.

For a child with an IFSP transitioning into the school system to an IEP, the team would have likely considered the AEM and technology needs of the child as required for them to benefit from daily routines in their natural environment and/or to achieve outcomes documented on the IFSP.

IDEA explains that six months before the child turns three, the team members working with the child and family/caregiver are required to meet with the LEA to discuss the upcoming transition. At this time, it is important to reconsider the child's need for AEM and technologies and discuss what solutions may benefit the child in new environments where activities and routines are different. There are many AEM and technology solutions children may need between the ages of birth to three that would continue to benefit them as they transition at the age of three. If it is determined AEM and technologies used in early intervention will transition with the child, the entities involved (i.e. parent/caregiver, SoonerStart, LEA, etc.) can document the transfer using an Agreement for the Purchase/Sale or Statement Declining the Sale of AT Devices.

View the [Agreement for the Purchase/Sale or Statement Declining the Sale of AT Devices \(PDF\)](https://okabletech.org/wp-content/uploads/2020/12/2020-AT-Purchase-Agreement-Dec10th_2.pdf): okabletech.org/wp-content/uploads/2020/12/2020-AT-Purchase-Agreement-Dec10th_2.pdf

For children birth to age 3 who are not receiving SoonerStart Early Intervention Services, families and caregivers will want to keep copies of reports and details of services and supports received. This information will help following the child's transition into LEA services so that those caring for and serving the child know the child's needs and abilities as well as which solutions are currently helping meet the child's needs.

When children turn 3, qualify, and families/caregivers elect to receive services through the LEA, documentation of needs, abilities, and solutions may be captured on the Individualized

Education Program (IEP) or 504 Plan. It is vital that accurate and timely details be included initially and that they are updated as the child progresses through grades. This documentation will be needed to help regular and special educators, paraprofessionals, related service providers, and administrators know the needs of the child and what materials, technologies, and services to provide.

For a student in need of a read-aloud accommodation for the state English Language Arts (ELA) Assessments, evidence in the IEP must indicate the student's ability to decode text or braille is severely limited, and that the accommodation is being used in daily instruction.

The deadline for applying for this non-standard accommodation is **Feb. 1, and applications must be submitted each year.**

Learn more about the [non-standard accommodation process](https://sde.ok.gov/overview-non-standard-accommodations) from the Oklahoma Department of Education's website: sde.ok.gov/overview-non-standard-accommodations.

For students who receive documentation of needs, abilities, and solutions following an Independent Educational Evaluation (IEE), the Oklahoma State Department of Education Parents Rights in Special Education: Notice of Procedural Safeguards states, "... the results of the evaluation must be considered by the school district in any decision made with respect to the provision of a FAPE to your child..."

For the individual moving into adult life, accessible formats and needed technologies can facilitate greater independence. Some individuals will need AEM and AT to stay competitive with their peers while others will require AEM and AT to independently access information in the environment. Regardless of the specific need, individuals can benefit greatly by having needed accessible formats and technologies acquired and implemented prior to a transition.

IDEA mandates that transition planning for students moving from school to postsecondary endeavors starts no later than the first IEP to be in effect at the beginning of the ninth-grade year or by age sixteen, whichever comes first. Additional entities and agencies should be invited to participate in this planning process.

IDEA divides transition planning activities into five areas:

1. Instruction
2. Related services
3. Community experiences
4. The development of employment and other post-school adult living objectives
5. If appropriate, acquisition of daily living skills and provision of a functional vocational evaluation

AEM and technologies can apply to any or all of the above areas when determining the transition needs of graduating students.

If it is determined AEM and technologies used in high school will transition with the individual, the entities involved (e.g., LEA, DRS, etc.) can document the transfer using an Agreement for the Purchase/Sale or Statement Declining the Sale of AT Devices.

Find the [Agreement for the Purchase/Sale or Statement Declining the Sale of AT Devices \(pdf\)](https://okabletech.org/wp-content/uploads/2020/12/2020-AT-Purchase-Agreement-Dec10th_2.pdf): okabletech.org/wp-content/uploads/2020/12/2020-AT-Purchase-Agreement-Dec10th_2.pdf

Additional details about documenting needs, abilities, and solutions can also be included in specific entities' written guidelines (See Quality Indicator 3.).

HE

For students who transition into Institutions of HE with an Individualized Plan for Employment (IPE), and for those who acquire services through Vocational Rehabilitation or Services for the Blind and Visually Impaired, documentation regarding needs, abilities, and solutions may be included in the IPE. For students who self-identify as an individual with a disability with Student Disability/Accessibility Services, documentation will be included on file with the college or university. This documentation will allow the student to receive needed accommodations, including accessible formats, for instruction and testing in coursework.

Additional details about documenting needs, abilities, and solutions can also be included in specific entities' written guidelines (See Quality Indicator 3.).

WFD

For students who transition into the workforce with an Individualized Plan for Employment (IPE), and for those who acquire services through Vocational Rehabilitation or Services for the Blind and Visually Impaired, documentation regarding needs, abilities, and solutions may be included in the IPE. For individuals who self-identify as an individual with a disability with their employer, documentation may be included in the individual's human resources or personnel file. Documentation can assist the individual in receiving needed accommodations, including accessible formats, for on-the-job training and completion of work tasks.

Additional details about documenting needs, abilities, and solutions can also be included in specific entities' written guidelines (See Quality Indicator 3.).

Step 5: Implementing/Monitoring Progress

Once the accessible formats and technologies have been acquired and needs, abilities, and solutions have been documented, the next step is to implement the solutions and then monitor progress.

Implementing AEM and Technologies

There are three areas to focus on when implementing AEM and technologies.

1. Inclusion of Needed AEM and Technologies in Applicable Environments
2. Training
3. Equipment Management

Individuals will have much more success with this step when an implementation plan is developed and used. It is wise to also develop a contingency plan to ensure individuals have access to needed accessible formats and technologies in the event their primary solution malfunctions.

1. Inclusion of Needed AEM and Technologies in Applicable Environments

Because trials have already occurred and decisions have already been made regarding which accessible formats and technologies are needed in applicable environments, the team can now focus on any goals to be addressed using the solutions. Including goals in the implementation plan can ensure everyone is aware of:

- How success will be determined
- The level of achievement that is reasonable to expect
- How to know if the accessible formats and technology are not working

Janice Light, leader in research related to augmentative and alternative communication (AAC), developed a list of comprehensive competencies, or focus areas, that can be used as a guide for developing goals towards communicative competence using AAC. These competencies can be slightly edited and applied to AEM and technology goals as well and include:

- **Operational:** Skills needed to make the accessible formats and technologies work
- **Functional:** Skills needed to use the accessible formats and technologies to complete real tasks
- **Strategic:** Skills involved in knowing when to use certain accessible formats and technologies and when to use others
- **Social:** Skills needed to use the accessible formats and technologies around and with other people

View more information from [Janice Light \(1989\) *Toward a definition of communicative competence for individuals using augmentative and alternative communication systems, Augmentative and Alternative Communication*](https://doi.org/10.1080/07434618912331275126). doi.org/10.1080/07434618912331275126

2. Training

The amount of training required for an individual to use AEM and technologies will vary according to the complexity of the technology selected to access the accessible formats and the abilities of the individual. For example, use of a large print book would not require much training. However, if an individual is using a text-to-speech software or a refreshable braille display to access digital text, more advanced training may be needed. Other stakeholders may also need training in order to support the individual in all applicable environments. Training may include when to use a particular format or tool for a specific task and how to request needed supports when they are not readily available. Plans should include who needs to be trained, what content should be included, as well as timelines for completion of training.

When an individual first begins using accessible formats and technologies, instruction should include multiple opportunities for the individual to understand the purpose, benefits, and anticipated outcomes. It is helpful to start by providing opportunities for the individual to use the accessible formats and technologies to successfully complete familiar tasks, possibly in a single environment. Gradually building on early successes and slowly introducing the complexity of the accessible formats and technologies will enable the individual to master them and work as independently as possible on reaching goals and completing tasks in a variety of environments (See Quality Indicator 4). Teams will need to work together to support the individual's use of AEM and technologies to monitor changes in participation and achievement.

3. Equipment Management

Depending on an individual's supports in different environments, there may be others who take responsibility for the ongoing maintenance of equipment being used with accessible formats. Often batteries need to be charged (and changed) and the equipment needs to be cleaned/sanitized. In some cases, equipment needs to be customized to meet the individual's needs. When repairs are needed, plans should be in place for getting the equipment fixed as well as for the provision of alternative technology solutions to be used in the interim.

It is important for plans to stipulate who is responsible for completing tasks related to customization, maintenance, and repairs. Plans should include how often tasks are to be completed and who pays for them (when costs are associated).

Monitoring Progress

It is important to periodically review an individual's progress in all areas of AEM and technology use. This can happen annually or when requested by a team member. Having data on the individual's use of the accessible formats and technologies will be essential in determining the continued need, and use of, those specific accessible formats and technologies. Teams can use the SETT (or HAAT) process, again, to ReSETT or look at the individual's current abilities, needs, environments, tasks, and tools. This is a great way to determine if the individual's implementation plan is working and can stay the same or whether the plan needs to be changed to better meet the individual's needs and goals (See Quality Indicators 5 and 6.).

6 | Conclusion

The resources available to assist individuals with disabilities in selecting, acquiring, and using accessible formats, accessible technology, and AT is expansive. Advances in technology are allowing greater built-in features which improve readability of text such as text-to-speech, highlighting, and adjustable fonts. Attention must still be paid to the procurement and provision of accessible formats of children's books, textbooks, novels, training materials, etc. Those creating their own materials must take care to ensure that accessibility is at the core of their materials and that they are designed for use by all. Properly matching individuals to accessible formats and technologies and assisting them with the acquisition and use of these solutions has the potential to greatly impact the independence, participation, and progress for people with disabilities of all ages.

7 | Appendix A: Laws, Regulations, & Guidelines Related to Provision of AEM and Technologies

Civil Rights

Americans with Disabilities Act of 1990 (ADA)

The Americans with Disabilities Act (ADA) was signed into law on July 26, 1990. Its overall purpose is to make American society more accessible to people with disabilities. In 2008, Congress passed the ADA Amendments Act (ADAAA). Its purpose is to broaden the definition of disability, which had been narrowed by U.S. Supreme Court decisions.

- **Title I** of the ADA is designed to help people with disabilities access the same [employment](#) opportunities and benefits available to people without disabilities, including through the provision of reasonable accommodations to qualified applicants and employees.
- **Title II** of the ADA prohibits discrimination against people with disabilities in all programs, activities and services from public entities, including state and local governments. Public K-12 schools are covered under this title.
- **Title III** prohibits discrimination against people with disabilities in private places of public accommodation, including private schools, movie theaters, stadiums and the like.
- **Title IV** of the ADA requires a nationwide system of telecommunications relay services for people with hearing and speech disabilities to communicate over the telephone. It also requires closed captioning of federally-funded public service announcements.
- **Title V** of the ADA addresses a variety of miscellaneous topics that relate to the ADA as a whole, such as protections against retaliation and coercion for people who initiate ADA complaints, how lawyer's fees should be handled and so on.

For further explanation of effective communication, see the [Dear Colleague Letter](#) from the U.S. Department of Education and the U.S. Department of Justice at: www2.ed.gov/about/offices/list/ocr/letters/colleague-effective-communication-201411.pdf

To learn about the [ADA](#), visit: ada.gov/pubs/adastatute08.htm

Rehabilitation Act of 1973

The Rehabilitation Act of 1973 (often just called the "Rehab Act") prohibits discrimination on the basis of disability in programs run by federal agencies; programs that receive federal financial assistance; in federal employment; and in the employment practices of federal contractors.

- **Section 501** of the Rehab Act prohibits employment discrimination against people with disabilities in the federal sector.

- **Section 503** of the Rehab Act prohibits federal contractors (or subcontractors) from discriminating against applicants and employees with disabilities and requires affirmative steps to hire, retain and promote qualified people with disabilities. Under its affirmative action requirements, Section 503 has a 7% representation goal for employees with disabilities.
- **Section 504** of the Rehab Act prohibits discrimination against qualified people with disabilities by any program or activity that receives federal funding, including K-12 schools and institutions of higher education.
- **Section 508** of the Rehab Act requires federal agencies' information and communications [technology](#) to be accessible to people with disabilities, including members of the public as well as federal employees.

Learn More about [Section 508](#): section508.gov

Copyright Law

1931 Act to Provide Books for the Adult Blind

It has long been legal for authorized entities to reproduce copyrighted materials for the purpose of making accessible formats for use by individuals with print disabilities. However, prior to 2004, there was not a reliable system for ensuring that materials used in schools would be available from such sources.

View the [1931 Act](#) on the National Library Service at the Library of Congress: loc.gov/nls/about/organization/laws-regulations/governing-legislation-act-march-3-1931

Section 121 of the U.S. Copyright Law – Chafee Amendment

It is very important to seek permission from a publisher before reproducing or adapting textbooks, worksheets, handouts, and other curricular materials for use in the classroom. Previous amendments to U.S. Copyright Law could have been interpreted to mean that educators were authorized to reproduce copyrighted materials for use by students with print disabilities. However, an amendment passed in 2018 clarified the wording, specifying that only the NIMAC and other non-profit or governmental agencies (that have a primary mission to provide specialized services relating to training, education, or adaptive reading or information access needs of blind or other persons with disabilities) are authorized to reproduce copyrighted materials without seeking permission from a publisher.

View more information on the [Chafee Amendment](#) on the CAST website: aem.cast.org/acquire/chafee-amendment

ICT Accessibility Law

W3C Web Content Accessibility Guidelines

The Web Content Accessibility Guidelines (WCAG) are widely regarded as the international standard for Web accessibility. They are the basis for many national accessibility laws, including Section 508 in the United States.

Learn more about [WCAG Guidelines](http://w3.org/WAI/standards-guidelines/wcag) on the W3C website: w3.org/WAI/standards-guidelines/wcag

Assistive Technology (AT) Act

The Assistive Technology (AT) Act was first passed by Congress as the Technology-Related Assistance Act of 1988 and has been reauthorized in 1994, 1998, and 2004. The AT Act provides funding to states to increase access, availability, and funding for AT. State AT Act Programs provide services to persons with disabilities across the lifespan, as well as to their families or guardians, service providers, and agencies.

Learn More about the [AT Act](http://congress.gov/bill/108th-congress/house-bill/4278) on the Congress.gov website: congress.gov/bill/108th-congress/house-bill/4278

Twenty-First Century Communications and Video Accessibility Act (CVAA)

On October 8, 2010, President Obama signed the Twenty-First Century Communications and Video Accessibility Act (CVAA) into law. The CVAA updates federal communications law to increase the access of persons with disabilities to modern communications. The CVAA makes sure that accessibility laws enacted in the 1980s and 1990s are brought up to date with 21st century technologies, including new digital, broadband, and mobile innovations.

1. **Title I:** Communications Access, including text messaging, e-mail, instant messaging, and video communications services and mobile web browsers.
2. **Title II:** Video Programming, including a requirement for video programming that is closed captioned on TV to be closed captioned when distributed on the Internet.

Learn more about the [Twenty-First Century Communications and Video Accessibility Act \(CVAA\)](http://www.fcc.gov/consumers/guides/21st-century-communications-and-video-accessibility-act-cvaa): www.fcc.gov/consumers/guides/21st-century-communications-and-video-accessibility-act-cvaa

Telecommunications Act of 1996

An Act to promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies.

View more information about the [Telecommunications Act of 1996](https://www.fcc.gov/general/telecommunications-act-1996) at: [fcc.gov/general/telecommunications-act-1996](https://www.fcc.gov/general/telecommunications-act-1996)

Early Learning and K-12 Education

Individuals with Disabilities Education Act (IDEA)

The Individuals with Disabilities Education Act (IDEA), as reauthorized in 2004, requires that elementary and secondary school students with disabilities, who need print instructional materials including workbooks and other supplemental materials in an accessible format receive them in a timely manner. This means that school districts must take reasonable steps to provide AEM to eligible students with disabilities without delay, typically at the same time as other students receive educational materials. Each state has the responsibility to define “in a timely manner.” Oklahoma has defined it as “usually about the same time as the traditional materials are received for other students, unless unusual circumstances exist.”

From the [Oklahoma State Department of Education AEM page](https://sde.ok.gov/accessible-educational-materials) (sde.ok.gov/accessible-educational-materials)

Fulfilling that requirement would be difficult, if not impossible, without the inclusion of language within IDEA that authorized creation of an accessible file standard and a process for storing, retrieving, and transforming those files into accessible formats which can be read by students with print disabilities.

Read more about the [National Instructional Materials Accessibility Standard \(NIMAS\), and the National Instructional Materials Access Center \(NIMAC\)](https://aem.cast.org/nimas-nimac/nimas-nimac) at: aem.cast.org/nimas-nimac/nimas-nimac

Read more about [how IDEA provisions influence AEM service delivery for students](https://aem.cast.org/get-started/resources/2021/the-right-of-students-with-disabilities-who-need-accessible-educational-materials-to-receive-these-materials-in-a-timely-manner). Karger, Joanne, J.D., Ed.D. (2021). AEM Center Brief: The Right of Students with Disabilities Who Need Accessible Educational Materials to Receive These Materials in a Timely Manner. Wakefield, MA: National Center on Accessible Educational Materials. Retrieved [5.28.2021] from <https://aem.cast.org/get-started/resources/2021/the-right-of-students-with-disabilities-who-need-accessible-educational-materials-to-receive-these-materials-in-a-timely-manner>

AT is technology used by individuals with disabilities in order to perform functions that might otherwise be difficult or impossible. The federal regulations for implementation of IDEA define AT devices and services and require Individualized Education Program (IEP) teams to consider the AT needs of students during the development, review, and revision of an IEP.

IDEA also requires schools to provide AT if it is needed for a student to receive a free appropriate public education (FAPE). The emphasis on FAPE is that the student is able to function well enough to make reasonable educational progress. FAPE can include a variety

of services such as special education, related services, supplementary aids and services, program modifications or support for school personnel.

AT, just like all other components of FAPE, must be provided at no cost to parents. LEAs must provide or pay for any AT necessary to ensure FAPE, either directly or through contract or other arrangements. IDEA states that schools may not unnecessarily delay the provision of AT devices and services due to funding issues if a child requires the devices and services to benefit from the IEP.

For more information about including AT in the IEP, view the following resources: [AT Technical Assistance Document for IDEA Part B](https://okabletech.org/wp-content/uploads/2020/06/Part-B-TA-Doc-Phase-2_Ver13_508.pdf): okabletech.org/wp-content/uploads/2020/06/Part-B-TA-Doc-Phase-2_Ver13_508.pdf

[Oklahoma Special Education Process Guide \(PDF\)](https://sde.ok.gov/sde/documents/2017-08-28/oklahoma-special-education-process-guide): sde.ok.gov/sde/documents/2017-08-28/oklahoma-special-education-process-guide

Higher Education

Higher Education Opportunity Act (HEOA) of 2008

The Higher Education Opportunity Act of 2008 requires all post-secondary institutions, as of July 1, 2010, to make textbook information available for all courses, including both ISBNs and pricing information. This information must be offered as part of an institution's online class schedule, and must be viewable by students in advance of registration for any given academic term.

View more information about [the Higher Education Opportunity Act from the US Department of Education](http://www2.ed.gov/policy/highered/leg/hea08/index.html): www2.ed.gov/policy/highered/leg/hea08/index.html

Higher Education Compliance Alliance (HECA)

The HECA Compliance Matrix provides a comprehensive list of key federal laws and regulations governing colleges and universities. It includes a summary of each law, applicable reporting deadlines, and links to additional resources. Users can sort by topic area or by date to plan for upcoming reporting requirements. Users can also filter by topic, to limit the matrix to certain topics of interest (i.e. athletics or human resources).

Learn more about the [Higher Education Compliance Alliance \(HECA\)](http://www.higheredcompliance.org): www.higheredcompliance.org

Workforce Development

Workforce Innovation and Opportunity Act (WIOA)

The U.S. Departments of Labor and Education have collectively issued five rules to implement the *Workforce Innovation and Opportunity Act (WIOA)* (Pub. L. 113-128). *WIOA* is landmark legislation that is designed to strengthen and improve our nation's public

workforce system and help get Americans, including youth and those with significant barriers to employment, into high-quality jobs and careers and help employers hire and retain skilled workers.

View the [WIOA Fact Sheet \(PDF\)](https://doleta.gov/WIOA/Docs/Top-Line-Fact-Sheet.pdf) at: doleta.gov/WIOA/Docs/Top-Line-Fact-Sheet.pdf

Workforce Innovation and Opportunity Act (WIOA) Section 188

On December 2, 2016, the Department of Labor published a final rule revising the regulations implementing the nondiscrimination and equal opportunity provisions of Section 188 of the Workforce Innovation and Opportunity Act (WIOA). Section 188 prohibits discrimination on the grounds of race, color, religion, sex, national origin, age, disability, political affiliation, or belief, among other bases in programs and activities that receive Federal financial assistance. Programs and activities of the American Job Center delivery system are subject to the equal opportunity provisions of Section 188 regulations, including accessible materials and technologies for job seekers and employees who need them.

The final rule contains substantive changes since 1999, when the regulations were originally issued. Several are specific to accessibility of materials and technologies:

- Updates to the regulation address advances in information and communication technology, including online service delivery models. The final rule specifies that recipients must “provide individuals with disabilities access to, and use of, information, resources, programs, and activities that are fully accessible, or ensure that the opportunities and benefits provided by the electronic and information technologies are provided to individuals with disabilities in an equally effective and equally integrated manner.” For example, if a consumer of an online job training service is blind, the learning management system and materials used (documents, video, websites, simulations, etc.) must be accessible to the user’s screen reading technology at the time the service is accessed.
- A new provision requires recipients to ensure **programmatic accessibility** for individuals with disabilities, including accessibility of services, technology, and materials. Programmatic accessibility is defined as “policies, practices, and procedures providing effective and meaningful opportunity for persons with disabilities to participate in or benefit from aid, benefits, services, and training.” Examples of programmatic accessibility include widely communicated procedures for requesting and receiving accommodations, inclusion of an accessibility clause in purchase order and contract language, and staff guidelines for selecting and creating accessible materials and technologies.
- The definition of “auxiliary aids or services” was revised to include new technology alternatives. For example, if a job training activity requires use of web conferencing technology (live meeting, webinar, job coaching, etc.), events must be live captioned by a qualified voice-to-text service for customers who are deaf or hard of hearing.

View the [Implementation of the Nondiscrimination and Equal Opportunity Provisions of WIOA](https://www.federalregister.gov/documents/2016/12/02/2016-27737/implementation-of-the-nondiscrimination-and-equal-opportunity-provisions-of-the-workforce-innovation): [federalregister.gov/documents/2016/12/02/2016-27737/implementation-of-the-nondiscrimination-and-equal-opportunity-provisions-of-the-workforce-innovation](https://www.federalregister.gov/documents/2016/12/02/2016-27737/implementation-of-the-nondiscrimination-and-equal-opportunity-provisions-of-the-workforce-innovation)

Vocational Rehabilitation (VR)

The Secretary amends the regulations governing the State Vocational Rehabilitation (VR) Services program and the State Supported Employment Services program to implement changes to the Rehabilitation Act of 1973, as amended by the Workforce Innovation and Opportunity Act (WIOA) signed into law on July 22, 2014. The Secretary also updates, clarifies, and improves the prior regulations.

View the [State VR Services Program; State Supported Employment Services Program: Limitations on Use and Subminimum Wage](#):

[federalregister.gov/documents/2016/08/19/2016-15980/state-vocational-rehabilitation-services-program-state-supported-employment-services-program](https://www.federalregister.gov/documents/2016/08/19/2016-15980/state-vocational-rehabilitation-services-program-state-supported-employment-services-program)

Oklahoma Law

Oklahoma Dyslexia Law

The most recently adopted legislation related to AEM is Oklahoma House Bill 1228. HB 1228 was signed into law in April, 2019 requiring Local Education Agencies (LEAs) to develop a professional development program to provide annual dyslexia awareness training for teachers and administrators. The law states that beginning in the 2020-2021 school year, a dyslexia awareness program shall be offered which includes training in awareness of dyslexia characteristics in students, effective classroom instruction to meet the needs of students with dyslexia, and available dyslexia resources for teachers, students, and parents.

Dyslexia is a learning disability that is characterized by difficulty reading due to problems identifying speech sounds and learning how they relate to letters and words. Students with dyslexia, along with students with visual impairments and physical disabilities that prevent access to printed text, are said to have a “print disability” and are therefore eligible to receive AEM and associated Assistive Technology (AT) that may be needed for reading.

View more information on [Oklahoma House Bill 1228](#): legiscan.com/OK/text/HB1228/2019

Electronic and Information Technology Accessibility (EITA)

Oklahoma adopted the federal 508 standards and passed EITA legislation, which went into effect in 2005, mandating compliance by all state agencies, higher education, and CareerTech Centers. Acquiring educational materials that have been approved for purchase by the Oklahoma Textbook Adoption Committee will help to ensure that all students receive the materials they require.

Learn more about [Oklahoma EITA](#): accessibility.ok.gov

Dispute Resolution

Parents and guardians have several options if they believe a school is not providing the services a child needs. Under IDEA, a parent challenging the provision of FAPE may request

mediation, file a complaint with the state educational agency, or request an impartial administrative hearing by filing a due process complaint.

View more dispute information on [Special Education Resolution Center \(SERC\)](http://okserc.org): okserc.org

Before resorting to such measures, the parent or guardian should arrange to meet with the IEP team or the school's Title II or 504 Coordinator to discuss concerns. If an acceptable solution is not reached, the parent or guardian should consider using the school district's published disability grievance procedures. An additional resource available to help work through disagreements is the Special Education Resolution Center (SERC), a program of Oklahoma ABLÉ Tech. SERC offers innovative programs that assist school districts and parents in settling disputes regarding IEPs. The programs are provided at no cost through a partnership with the Oklahoma State Department of Education (OSDE).

Under Title II, a parent who believes a child is not receiving appropriate educational services may choose to file a lawsuit in court. Parents of a student on an IEP generally must exhaust the administrative hearing procedures of IDEA, which means obtaining a final decision under IDEA's impartial due process hearing procedures, before filing a lawsuit seeking a remedy that is also available under IDEA.

Both the U.S. Department of Education Office of Civil Rights (OCR) and the Department of Justice (DOJ) Civil Rights Division investigate complaints of disability discrimination at schools.

[Learn how to file a complaint with OCR](http://www2.ed.gov/about/offices/list/ocr/complaintintro.html) at:
www2.ed.gov/about/offices/list/ocr/complaintintro.html

[Learn how to file a complaint with DOJ](http://ada.gov/fact_on_complaint.htm) at: ada.gov/fact_on_complaint.htm

8 | Appendix B: AEM, Accessible Technology, and AT Case Studies and Case Law

The following case studies illustrate how AEM and related technologies may be matched to individuals across the lifespan based on their needs, abilities, tasks, and environments. The following cases show litigation related to accessible materials and technologies.

EC Case Studies

Child 1

A 1-year-old with fine motor impairments is cared for at home by his family. He is able to crawl to a bookshelf and pull books down; however, he is unable to turn the pages of a board book independently. His parents are looking for ways he can access engaging print-based materials independently. Some solutions they are exploring include board books with large paperclips and puff balls as page fluffers as well as audiobooks that can be turned on with the touch-activation of a switch connected to a CD player. Both options can be used at different times depending on the energy level and interest of the child.

Child 2

This 3-year-old Pre-K student has low vision and delayed fine motor skills recently and transitioned into public school from the SoonerStart Early Intervention Program. The school is looking for tools to help the student participate in the early childhood special education classroom to see and manipulate objects and printed materials. She is quite unsteady walking, and teachers are not sure how much of her environment she can see. They are searching for tools to capture her interest and prompt her to use her vision. As this student is unable to see, hold, and manipulate objects easily, a possible solution is a page magnifier which has legs and a light for illuminating from above or LightBox which has a surface for placing objects which are illuminated from below. The LightBox is sturdy, yet portable. An iPad with early childhood apps could also be considered; however, the student would have to hold the device steady or use a tablet stand.

Child 3

A 5-year-old with hearing impairments participates in literacy activities in his classroom at school. This child has recently been fitted with hearing aids but needs additional assistance in multiple environments including the classroom, gymnasium for physical education, and art class. The student is having a hard time staying focused in the general classroom and is not able to follow directions while in the gymnasium and art class where room acoustics are very noisy with excessive reverberation. In this case study, the student is very young, and the audiologist is involved in the recommendations. The solution needs to be portable because it needs to be able to go into multiple environments. The recommendation is an ear-level receiver, that could also be used at home. The school is considering adding a classroom amplification system to the general classroom. The audiologist does not want to see the student using headphones with the hearing aids, as it blocks the microphone in the

hearing aid. She also thinks the student would benefit from an ear-level receiver, such as a Roger X receiver with the Phonak Roger Pen.

K-12 Case Studies

Student 1

A second-grade student with dyslexia is determined to need her materials for reading, science, and social studies in a digital format to be read on a portable device with a text-to-speech feature. The school has a Bookshare account and the teacher is registered as a sponsor. The teacher documents the student's print disability and registers her as a member under the school's organizational Bookshare account. The teacher then finds the student's textbooks and other required reading materials in the Bookshare library and assists the student in accessing the materials using the Bookshare Web Reader on a school-supplied laptop.

Student 2

A TVI is seeking to determine if a sixth-grade student who currently receives large print textbooks from Liberty Braille would benefit from the use of an iPad with digital text for some of her educational materials. The TVI contacts Oklahoma ABLE Tech to borrow an iPad for a trial loan. Oklahoma ABLE Tech sends an iPad with an accessible book reading app to the school for assessment purposes, and offers technical assistance to help the school obtain an organizational membership in Bookshare and download the student's books. After determining that the iPad with the accessible book reading app is a good solution for the student, the TVI borrows an iPad from Liberty Braille for the student to use for the remainder of the school-term. The TVI also assists the student's family in obtaining an individual membership in Bookshare so that the student can access additional reading materials throughout the year.

Student 3

A ninth-grade student who is blind is determined to need embossed braille for Algebra I; braille ready format (BRF) for Oklahoma History, Physical Science, and French; and audio for English Literature. The teacher of the visually impaired (TVI) contacts Liberty Braille to request the student's Algebra I textbook in embossed braille. Liberty Braille sends the textbook to the school for the student to use and return upon completion of the Algebra I course. The TVI contacts Oklahoma ABLE Tech for help determining which AEM providers can supply the student's educational materials in the audio and braille ready formats and for assistance in determining what AT will be necessary. The school borrows a refreshable braille display and an audiobook player from Oklahoma ABLE Tech for assessment purposes. Oklahoma ABLE Tech assists the school in obtaining organizational memberships in Bookshare (free to school) and Learning Ally (scaled-fee), and downloading the student's materials in the desired formats. Following the successful trial loan, the school borrows a refreshable braille display and an audiobook player from the AIM Center at the Oklahoma Library for the Blind and Physically Handicapped for the student to use for the remainder of the school year.

Student 4

An IEP team has determined that an eleventh-grade student who is reading below grade-level and whose primary language is Spanish needs educational materials in digital format to be read with text-to-speech. IDEA 2004 requires that schools provide AEM to students who need them. However, since this student does not have a qualifying print disability, she is not eligible to receive materials from Bookshare. Therefore, the school requests a digital copy from the publisher or permission to copy and scan the student's materials into electronic text. The teacher also contacts Oklahoma ABLE Tech for assistance in considering AT to convert the student's educational materials to synthesized speech. The teacher decides to borrow a scan and read system and an iPad with an accessible book-reading app for a free six-week trial from Oklahoma ABLE Tech. During the trial, the IEP team determines that the scan and read system works better for the student than the iPad with accessible book reading app, and that the school will purchase the device for use in the classroom. The IEP team plans to monitor the student's progress using the scan and read device at school, and if necessary, will consider allowing the student to use the device at home.

K-12 Case Law

Case 1

Individual(s)

A high school junior with a learning disability was able to perform at a high level when permitted to listen to, rather than read, school materials. The student received accommodations on a 504 plan (*Editor note: Stand-alone text-to-speech software is readily available to schools for use with digital text. Additionally, schools can obtain instructional materials which include a text-to-speech feature for qualified students from Bookshare and Learning Ally.*)

School's Participation

Materials for some classes were made accessible to the student using programs that read material out loud. With higher-level math and chemistry classes, more advanced software is needed to scan and read the equations and symbols. The school agreed to scan math materials to use with the text-to-speech software but made the student responsible for scanning and translating chemistry and some history materials.

Problem

The school was considered in violation of the Section 504 of the Rehabilitation Act of 1973 for denying nondiscriminatory access to education.

Results

The student was awarded a temporary restraining order that required the school district to provide scanned, accessible materials for chemistry using an advanced text-to-speech program.

L.G. Port Townsend School Dist. No. 50, 112 LRP 46490 (WD Washington 2009)

Case 2

Individual(s)

An eighth grader with learning disabilities on an IEP needed Kurzweil and WYNN literacy software and audiobooks to provide him access to education. *(Editor note: Literacy software includes many features such as text-to- speech, customizable reading speed, dictionary, talking spell checker, word prediction, graphic organizer, highlighters, and voice input.)*

School's Participation

The school included information about the student's need for AT in the IEP.

Problem

The school did not provide the AT determined as needed for the student to access his education.

Results

The school was considered in violation of IDEA for not providing FAPE.

Miller v. Board Of Education of the Albuquerque Public Schools, 565 F.3d 1232, (10th Cir. 2009)

Case 3

Individual(s)

A ninth grader with autism, a speech-language impairment, and former diagnosis of intellectual disability on an IEP transitioned from middle school to high school within the same school district. The student previously used an iPad to achieve educational goals.

School's Participation

The school indicated in the student's IEP the need for an iPad to achieve educational goals and provided the student an iPad in middle school. When the transfer of the iPad from the middle school did not occur in a timely manner, the high school provided the student a Kindle Fire. *(Editor note: iPads include many built-in accessibility features, as well as integration of apps for speech, organization, note-taking, and sound recording. At the time of this case, the Kindle Fire did not include such accessibility features.)*

Problem

Technical difficulties, including licensing issues, delayed the transfer of the iPad to the student at the high school until March of the ninth grade year. Once the student received the iPad, the support teacher and one-on-one aide were not trained in using the iPad as AT to support the student.

Results

The school was considered in violation of IDEA for not providing FAPE. The district was ordered to contract with a private speech pathologist and/or an expert in iPad educational application technology to research, acquire, and teach the student, parent, teachers, and aide how to use appropriate educational applications to assist the student in a variety of ways and how these applications can be useful in supporting the IEP goals.

HE Case Studies

Student 1

This freshman in college has a visual impairment. He was able to keep up with reading assignments in high school with the use of a page magnifier and support of a paraprofessional who often read books aloud. However, with his transition and the increasing demands of college, a solution is needed to help him become more independent with reading tasks. He needs a tool, or tools, to allow him to read printed or digital materials in classrooms, the school library, and in his dorm. Providing digital text from Bookshare is one option that will allow the student to read books on an iPad with the Voice Dream Reader app. The student will be able to read visually until his eyes fatigue, and then he can switch to auditory learning, and listen to the text read aloud with synthesized speech. The student will also be able to use the app to read worksheets and other documents that his professors provide electronically. As the student often needs to see what teachers write on the whiteboard, he will also benefit from using the MATT Connect (Smart Tablet Magnifier). Another consideration is the OmniReader and the CCTV Merlin HD 17" Desktop Electronic Magnifier, but those do not provide all of the features of the iPad with app or the MATT Connect.

Student 2

This sophomore in college is losing her vision, so she wants to learn braille. It is important for her to be able not only to write in braille, but also read electronically, and create and save documents. She considers a range of low-tech to high-tech solutions, including a braille slate and stylus, a Smart Brailier, an electronic braille display, and an electronic braille notetaker. Portability was considered important because this student needs to carry the device to and from classes. A tool that meets all of these needs is the BrailleNote Apex Notetaker. The Apex is a computer in itself, which allows the student to read and write in braille, create and save documents, and even conduct research wirelessly. Using the electronic braille notetaker, the student will learn to write braille contractions from dictation.

Student 3

This 38-year-old veteran is taking courses online to obtain a degree. He has a mild visual impairment and severe to profound dysarthria (or weakness). His attention span is good, and his memory is intact. He is living at his parents' home. Trialing alternative computer input devices and methods such as adapted mice and keyboards would be beneficial. Beginning with the mouse, he could try a trackball and a joystick which would allow him to navigate the computer with minimal movement of the arm and little fatigue. With good head control, a hands-free mouse like the SmartNav may be another good option to trial. Many built-in features are available on his computer that support the output he would need including magnification and text-to-speech options.

HE Case Law

Case 1

Individual(s)

Students with vision impairments and blindness.

School's Participation

The school provided services, programs, and activities using Google Apps for Education for email, document processing, spreadsheets, calendar, etc.; digital textbooks, digital signs, and a University portal to register for classes, pay bills, obtain scholarship information, etc.

Problem

Screen readers did not work on Google Apps for Education; digital textbooks were not made accessible in a timely way; digital signs only provided information visually; the University portal was not accessible by a screen reader.

Results

The school was considered in violation of Title II of the ADA because individuals with disabilities were excluded from participating in or being denied the benefits of the services, programs, or activities of a public entity or being subjected to discrimination by the entity. The district was ordered to provide contact information, documents reflecting guidance, directives, or training provided on course accessibility, assurances on the accessibility of university services, programs, and activities, etc. See additional information about [University of Colorado at Boulder settlement \(PDF\)](http://accessinghigherground.org/wp/wp-content/uploads/2015/04/DOJ-Letter-of-Investigation2.pdf): accessinghigherground.org/wp/wp-content/uploads/2015/04/DOJ-Letter-of-Investigation2.pdf

University of Colorado at Boulder, DJ# 204-13-314

Case 2

Individual(s)

Students with disabilities.

School's Participation

The school provided a learning management system for class assignments and materials with live chat and discussion board functions, videos, documents, library database materials, and the use of classroom clickers for student participation.

Problem

The electronic and information technology used by the university was inaccessible for students with disabilities.

Results

The Office of Civil Rights accepted the complaint for resolution under the authority of Section 504 of the Rehabilitation Act of 1973 and Title II of the ADA. The university agreed to take actions including developing a draft Electronic Information Technology Accessibility Policy and draft procedures to implement the policy. See additional information about [University of Montana-Missoula settlement \(PDF\)](#) at:

Case 3

Individual(s)

Students who are deaf or hard of hearing

School's Participation

The school provided thousands of free online videos and audio files ("online programming"), which includes courses, educational lectures, and topics of general interest.

Problem

Closed captions were not provided in the online programming.

Results

Plaintiffs allege the university violated Title III of the ADA and Section 504 of the Rehabilitation Act by denying individuals who are deaf or hard of hearing equal access to the online programming. The university must provide captions for all online resources, including school-wide events that are live-streamed, content from department sponsored student organizations and any new university created audio or video hosted by third-party platforms. See additional information about Case 3: [Harvard settlement \(PDF\)](#) (ada.gov/briefs/harvard_soi.pdf) and [National Association of the Deaf article on Harvard settlement](#) (nad.org/2019/11/27/nad-announces-landmark-settlement-with-harvard-to-improve-online-accessibility/)

WFD Case Studies

Job Seeker/Employee 1

This job seeker has a visual impairment and is being considered for a position as a customer service representative for a call center. He has informed the company he needs screen reading software. The job will require him to use a single-ear Bluetooth headset with the telephone, so he will need to listen to the screen reader with his other ear. The screen reader must be easy to use, robust, and have available customer support. Tools to consider include the computer's built-in accessibility screen reading feature, JAWS Screen Reader, and the free, downloadable NonVisual Desktop Access (NVDA) Screen Reader. Built-in accessibility can be difficult to use and has limited features. The NVDA software is comparable to JAWS functionally; however, no technical support is available. These options need to be used with headphones or earbuds. Standard headphones cover both ears and block ambient sound. Earbuds offer the option of using one earbud with mono-audio but ambient sounds are blocked and quality is decreased. Aftershokz Bluetooth Headphones sit on the cheekbones and use bone-conduction technology to receive sound. The Aftershokz

Bluetooth Headphones are also wireless allowing the job seeker to move around his workspace and the within the office building while working. The job seeker will utilize AT to successfully perform the job functions including answering the telephone and entering information in the computer database.

Job Seeker/Employee 2

A junior attorney who has a reading disability is accustomed to using text-to-speech on a computer when in the office; however, she is frequently unable to read paper documents she receives in the courtroom. The attorney would benefit from AT but prefers to discreetly access the information in these documents so she does not attract undue attention. Being unable to quickly read and comprehend information in hard copy documents is causing her to miss important points in court. A variety of tools are available to scan and convert printed text into digital text which can then be read aloud with synthesized speech. Points to consider include how overt or discreet the AT is, its ease of use, and portability. Options include stand-alone, scan and read devices such as the OmniReader that sits on the desktop; however, the size and weight of the device could make transporting and using it more burdensome, and it would call attention to the attorney's disability. A reading pen, such as the C-Pen Reader or Scanmarker Air, provides an unobtrusive way to scan and read a document, sentence-by-sentence or word-by-word, and get definitions when needed. The attorney could use earbuds to listen to the text being read aloud without others hearing. The OrCam MyEye scans and reads printed words without the need to hold a device. The OrCam combines a smart camera with a scanner and text-to-speech software in a small box that connects to eyewear. The attorney will use text scanning and reading technology in the courtroom, ensuring she has immediate access to important information in paper handouts and documents.

Job Seeker/Employee 3

This employee has worked for many years in the accounting department of a large university, but diabetic retinopathy has caused her to lose vision, and she now has difficulty performing work duties. Her position requires reading and entering sensitive personal and financial data in a database, operating commonly used office software, and reading from electronic files. This employee will need a tool to magnify the computer screen. Tools to consider for magnifying digital content include built-in accessibility on a desktop computer. If more robust features are needed, ZoomText software may be used. Both options fully integrate with the computer, and enlarge and enhance everything on the screen. If the employee uses her current computer, there is no additional cost to using built-in accessibility. The employee will use AT to read documents received electronically and perform all of the functions of her job.

WFD and the Community Case Law

Case 1

Individual(s)

California Council of the Blind and three individuals.

Entity's Participation

The entity provided notices to individuals containing time-sensitive information

Problem

Notices are not in accessible formats for those with visual impairments or blindness or the accessible formats are not provided in a timely manner.

Results

Providing information to blind individuals in alternative formats such as braille or large print is required by federal and state anti-discrimination laws: Title II of the Americans with Disabilities Act of 1990 (ADA) (42 U.S.C. § 12131, et seq.); Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. § 794); Section 1557 of the Affordable Care Act (ACA) (42 U.S.C. § 18116); California Disabled Persons Act (D.P.A.), Cal. Civ. Code 54, et seq. The entity was asked to identify people who need communication in braille or other accessible formats and respond appropriately to requests for accessible formats. See additional information about [California Department of Health Care Services settlement](http://dralegal.org/case/hinkle-et-al-v-kent-et-al) at: dralegal.org/case/hinkle-et-al-v-kent-et-al

California Department of Health Care Services; Contra Costa County; County of Alameda; County of San Diego, Case 3:18-cv-06430

Case 2

Individual(s)

Job seeker with prior experience as a paramedic who passed all prerequisite examinations and met all of the posted requirements for the position. Job seeker has monocular vision.

Entity's Participation

Recruiting for paramedic position with a fire department.

Problem

Inquired of the job seeker's medical condition before extending her a conditional offer of employment.

Results

The Equal Employment Opportunity Commission found probable cause that the entity had discriminated against the individual. Acts cited in the Statement of Interest include the Rehabilitation Act of 1973 and Title 1 of the ADA. The Statement of Interest was filed to clarify that under the Rehabilitation Act and the ADA. 1) employers must perform individualized assessments of a potential employee's ability to perform the essential functions of the job; 2) blanket rules barring individuals with particular disabilities are prohibited unless the rule is shown to be job related and consistent with business necessity, and 3) employers may not inquire into a potential employee's medical history before making a conditional offer of employment. See additional information about [City of New York settlement \(PDF\)](#) at: ada.gov/briefs/buttigieg_soi.pdf

City of New York, Civil Action No. 14-CV-4141

9 | Addendum: TVI Guide

Guide for Providing AT for Students with Visual Impairments

According to annual disability statistics, fewer than .9% of children ages 5 through 17 in the United States have a vision disability. While children with visual impairments represent a small proportion of the population of students served, their needs can be quite challenging. This addendum was developed to provide educators with an understanding of some differences among children with visual impairments, as well as tools and resources available to help them to learn and thrive. This document is not meant to be comprehensive, or to duplicate existing training materials and documents.

Visual Impairment Defined

Under IDEA, visual impairment including blindness means an impairment in vision that, even with correction, adversely affects a child's educational performance. The term includes both partial sight and blindness.

Learn more about [visual impairment](https://sites.ed.gov/idea/regs/b/a/300.8/c) at: sites.ed.gov/idea/regs/b/a/300.8/c

Diseases and Disorders

There are multiple conditions which may lead to visual impairment. These abnormalities may impact visual functioning, and by extension, education of the student, in a variety of ways. The effects on a child's development depend on the severity, type of loss, age at which the condition appears, and overall functioning level of the child. Many children who have multiple disabilities may also have visual impairments resulting in motor, cognitive, and/or social developmental delays.

The following selected terms include only a few of the many visual disorders found in children:

- Amblyopia (condition in which one eye fails to develop clear vision; commonly called lazy eye)
- Cataracts (clouding of the lens impacting visual clarity)
- Convergence Insufficiency (eyes drift outward when reading or doing close work)
- Cortical Visual Impairment (visual dysfunction caused by damage or injury to the brain)
- Glaucoma (damage to the optic nerve, usually caused by fluid build-up and increased pressure inside the eye resulting in peripheral vision loss, and difficulty seeing in dim light)
- Hyperopia (distant objects are seen clearly, but close objects are blurred; commonly called farsightedness)

- Infections, malformations, optic nerve defects, and trauma to the eye (various causes and results)
- Retinoblastoma (cancer that begins in the retina and may result in loss of the eye)
- Myopia (close objects are seen clearly, but objects farther away are blurred; commonly called nearsightedness)
- Nystagmus (repetitive, uncontrolled eye movements, often resulting in reduced vision)
- Strabismus (eyes are not both directed toward the same point simultaneously; commonly referred to as crossed- eyes)

Additional information about conditions which cause visual impairments is available from the following sources:

- [American Academy of Ophthalmology](http://aao.org/eye-health): aao.org/eye-health
- [American Foundation for the Blind](http://afb.org): afb.org
- [Optometrists Network](http://optometrists.org): optometrists.org
- [National Eye Institute at the National Institutes of Health](http://nei.nih.gov): nei.nih.gov

Educational Implications

There is not a “one-size-fits-all” solution for working with students who have visual impairments; educators must take the student’s individual needs into account when designing the education program. For instance, Albinism is a condition characterized by lack of pigment in the hair, skin, and eyes. The functional impacts on vision may include low vision, nystagmus (involuntary, rapid and repetitive eye movements), and photophobia (extreme light sensitivity). A student with photophobia must take care to limit exposure to bright light. Conversely, students with other eye conditions, such as retinitis pigmentosa, may benefit from increased lighting to be able to perceive printed materials and objects in their environment.

Children with visual impairments should be assessed as soon as possible following identification to benefit from early intervention programs, when applicable. Technology in the form of computers, braille equipment, and low-vision optical and video aids enable most children with visual impairments to participate in regular class activities. IDEA also requires that schools provide AEM to all students who need them—this can include audio, braille, digital, and large print materials.

Determining Optimal Mode of Learning

The way a student learns, and the accommodations needed, vary from student to student. Tools such as a Functional Vision Assessment and a Learning or Reading Media Assessment can help in determining the optimal mode of delivery for textbooks and other curricular materials, possible accommodations, and AT.

The following assessments should be conducted by a qualified professional such as a TVI. The Oklahoma School for the Blind provides outreach services including conducting assessments and a limited number of site visits for consultation.

Examples of Assessment Tools

- The [National Reading Media Assessment \(NRMA\)](http://nfbnrma.org/admin/users/about.php), nfbnrma.org/admin/users/about.php, is a research-based tool developed by the Professional Development and Research Institute on Blindness to determine the most appropriate reading medium/media for students who are blind/visually impaired considering current and future needs.
- The [Functional Vision Learning Media Assessment \(FVLMA\)](http://aph.org/product/fvlma-kit/) kit, aph.org/product/fvlma-kit/, is an American Printing House (APH) assessment tool developed to help practitioners gather, store, track, and analyze information regarding students' functional vision and appropriate learning media.
- The [Paths to Literacy Learning Media Assessment](http://pathstoliteracy.org/learning-media-assessment), pathstoliteracy.org/learning-media-assessment, offers a framework for selecting appropriate literacy media for a student who is visually impaired. Note: Paths to Literacy recommends that a Functional Vision Assessment (FVA) be done first, in order to determine what the student is able to see and how they are using their vision.

If assessment results indicate that the student will benefit from the use of braille, the IEP team should also consider the braille code(s) a student will learn such as Unified English Braille (UEB), UEB plus NEMETH Code, and/or Music Code. Note: Oklahoma public schools were scheduled to complete the transition from English Braille American Edition (EBAE) to U.E.B. in 2019.

Find information about online [UEB transition courses](http://brailleauthority.org/ueb.html#learn) at: brailleauthority.org/ueb.html#learn

Assistive Technology

AT includes devices and services that help a person accomplish a task that might otherwise be difficult or impossible to do without it. Many types of AT are available to help students who have visual impairment. AT for vision ranges from low-tech to high-tech and from free to high-cost. Many times a person will need multiple devices depending on the tasks they wish to accomplish, the locations or environments, and the degree of vision loss/amount of usable vision.

During consideration and selection of AT devices for vision needs, educators should consider whether the individual could comprehend materials or access the environment better if materials were enlarged or visually enhanced, auditory feedback were provided, or braille and/or tactile feedback were provided. The findings should guide educators in determining which types of devices to try with a student.

Examples of AT Devices for Vision

The following are examples of AT that assist individuals through magnification, audio output, providing tactile input/output, etc.

- Adapted learning aids (Adaptations may include enlarged display, high contrast colors, auditory feedback, haptic feedback, and tactile feedback.)
 - Calculators

- Games
- Tactile graphics tablets
- Recreational/sporting equipment
- Audiobook readers
- Braille displays/notetakers
- Electronic text readers
 - Screen reading software
 - Text reading apps and software
- Magnification tools
 - Optical magnifiers
 - Electronic video magnifiers
 - Screen magnification software
- Printers
 - Braille/tactile graphics embossers
 - 3D printers

AT Services

In addition to AT devices are the services needed to help a person select, acquire, and use the AT. Oklahoma ABLE Tech offers an AT Device Loan Program. Staff are available to assist individuals with the selection of devices.

[Borrow AT from ABLE Tech](https://okabletech.org/guide-to-all-services/device-loan-program) at: okabletech.org/guide-to-all-services/device-loan-program

View more information about specific products available for trial on the [ABLE Tech Vision AT. Discovery](https://okabletech.org/at-discovery/vision) web page at: okabletech.org/at-discovery/vision

An additional resource for assessment information is the textbook "*Assistive Technology for Students Who are Blind or Visually Impaired | A Guide to Assessment*" by Ike Presley and Frances Mary D'Andrea published by AFB Press.

Purchase the book from the American Printing House at: aph.org

Training is an AT service that must be provided to students to enable them to successfully use AT to meet their educational goals. TVIs and other educators may also require professional development in preparation to assist students. With the wide variety of devices and frequent technological advances, it is difficult for any one person to be an expert on all devices. Oftentimes, it is necessary for schools to obtain training from multiple sources

depending on needs. Oklahoma ABLE Tech provides AT Support Team Training to schools through a contract with OSDE. Oklahoma ABLE Tech training materials and opportunities assist schools in helping consider and assess students' AT needs as well as help educators with implementing the AT into the students' curriculum.

Below are a few training sources to consider:

- [ABLE Tech AT Support Team Workshops](http://okabletech.org/education-services/at-services-for-pk-12/at-support-team-workshops): okabletech.org/education-services/at-services-for-pk-12/at-support-team-workshops
- [American Foundation for the Blind \(AFB\)](http://afb.org/default.aspx): afb.org/default.aspx
- [Assistive Technology Industry Association \(ATIA\)](http://atia.org): atia.org
- [Association for Education and Rehabilitation of the Blind and Visually Impaired \(AERVBI\)](http://aerbvi.org): aerbvi.org
- [Freedom Scientific](http://freedomscientific.com/Services/TrainingAndCertification): freedomscientific.com/Services/TrainingAndCertification
- [NanoPac](http://nanopac.com): nanopac.com
- [National Federation of the Blind \(NFB\)](http://nfb.org): nfb.org
- [NewView Oklahoma](http://newviewoklahoma.org): newviewoklahoma.org
- [Oklahoma Department of Rehabilitative Services](http://okdrs.org/job-seekers/dvs): okdrs.org/job-seekers/dvs
- [Oklahoma School for the Blind](http://osb.k12.ok.us): osb.k12.ok.us

AT Funding

Under IDEA, LEAs must provide AT devices and services to students at no cost to families; however, schools do not always have to bear the entire cost. Federal and state governmental agencies provide funding for select devices for use by and with students with visual impairments. The AIM Center at the Oklahoma Library for the Blind and Physically Handicapped provides specialized educational materials and equipment for students who qualify for the Federal Quota Program administered by the American Printing House for the Blind. Liberty Braille provides textbooks and other curricular materials in large print and braille, in addition to select devices, free of charge to students through a contract with OSDE. Find additional funding information in the online guide OK Funding for Assistive Technology.

For more information on the provision of AT, including documenting AT in the IEP, see the [AT Technical Assistance \(TA\) Document, Part B](http://okabletech-docs.org/homepage/at-ta-document-part-b) at: okabletech-docs.org/homepage/at-ta-document-part-b

Teaching Tips and Instructional Strategies

Students with visual impairments need to learn the same information that students without disabilities learn and be held to the same high standards; however, in addition to learning core subjects such as math, English/language arts, history, and science, students with visual impairments may also need to learn specialized skills such as:

- Braille literacy (reading and writing in braille using a variety of tools)
- Auditory literacy (reading with audio format)

- Strategies and techniques for using AT
- Activities of Daily Living i.e. “blindness skills” such as cane travel, cooking, self-care, and dressing

Many of these skills must be taught explicitly, as students with visual impairment are frequently unable to learn through visual observation. Whatever the degree of impairment, students should be expected to participate fully in classroom activities. Although they may confront limitations, with proper planning and adaptive equipment, their participation can be maximized.

Following are tips for maximizing participation.

The Classroom

- Select optimal seating position based on student’s lighting needs
- Allow space for seeing eye/guide dog if applicable
- Assist student in using and storing adaptive equipment
- Keep aisles clear and drawers and cabinets closed

The Teacher

- Face the class while speaking
- Permit lectures to be recorded
- Provide classroom materials in accessible format(s) used by student
- Be flexible with assignment deadlines
- Consider alternative assignments (based on IEP team decisions)
- Consider alternative measures of assessing achievements
- Be specific with directions
- Provide “hands-on” learning experiences
- Make sure materials are properly scaled, i.e. enlarged to the student’s optimal font size
- Ask the student if they have any suggestions
- Keep communications open

The Rest of the Class

- Instruct others to yield the right of way
- Instruct students to help when asked
- Instruct students to ask if help is needed
- Instruct students to be considerate of the seeing eye/guide dog

Accommodation Resources

For information regarding accommodations, see the following:

- [OSDE—Special Education Services Oklahoma Accommodations Guide \(PDF\)](https://sde.ok.gov/sde/sites/ok.gov.sde/files/documents/files/Accommodations_Guide_0.pdf) at: sde.ok.gov/sde/sites/ok.gov.sde/files/documents/files/Accommodations_Guide_0.pdf
- [Oklahoma School Testing Program \(OSTP\) Accommodations for Students with an Individualized Education Program \(IEP\) or Section 504 Plan \(PDF\)](https://sde.ok.gov/sites/default/files/documents/files/Final%20OSTP-IEP-504-Accommodations%20%2819.20%29.pdf) at: sde.ok.gov/sites/default/files/documents/files/Final%20OSTP-IEP-504-Accommodations%20%2819.20%29.pdf
- [OSDE Overview: Non-Standard Accommodations](https://sde.ok.gov/sde/overview-non-standard-accommodations) webpage: sde.ok.gov/sde/overview-non-standard-accommodations

Instructional Settings and Staffing Considerations

Instruction may be provided to students with visual impairments in a variety of settings, including the general education classroom, pull-out for individualized instruction, resource room, self-contained special education classroom, or in a residential program such as the Oklahoma School for the Blind. Schools may provide educational and related services to students with visual impairment by employing or contracting with itinerate service providers. Service and staffing time must be considered on an individual basis by the IEP team. The responsibility for providing such services rests with the LEA; however, the Oklahoma School for the Blind may provide a limited number of site visits to schools as a support measure.

A TVI is the primary educator who provides specialized instruction to students with visual impairment. The TVI provides lessons in the use of braille and tactile graphics, strategies and use of assistive technology, and many other skills.

Services may also be provided by a Braille Transcriber, who may prepare worksheets, tactile graphics, and other necessary instructional materials for students to use. Additional professionals who may be involved include Orientation and Mobility Specialists (OMS) and Paraprofessionals.

Students with visual impairment may have co-existing disabilities which require additional services such as speech, occupational, or physical therapy. Deaf-blindness is a category of disability which includes students who have sensory losses in both vision and hearing.

For assistance in serving students with deaf-blindness, please contact the [Oklahoma Deaf-Blind Technical Assistance Project](https://ou.edu/education/edpy/special-education/deaf-blind-project.html): ou.edu/education/edpy/special-education/deaf-blind-project.html

Pre-Certification Training for TVIs

TVI Training for Oklahoma teachers is available through the TVI Institute, a collaboration of OSDE and OSB. For information email Karen Reed, kreed@osb.k12.ok.us. Educators may request to update their Oklahoma Teaching Certificate after receiving a passing score on the Oklahoma Subject Area Test (OSAT) for Blind/Visual Impairment (028) provided by the Certification Examinations for Oklahoma Educators (CEOE™).

View more information on the [CEOE website](https://ceoe.nesinc.com): ceoe.nesinc.com

Educators wishing to enroll in university training programs can find reviews from the Association for Education and Rehabilitation of the Blind and Visually Impaired (AERBVI).

View more information on the [AERBVI website](http://aerbvi.org/the-national-accreditation-council/higher-education): aerbvi.org/the-national-accreditation-council/higher-education

Conclusion

Education of students with visual impairments can be challenging, but the impact on the future employment and personal success for students can be enormous. The information and resources included in this addendum are provided to help.

For additional information contact Oklahoma ABLÉ Tech by calling: 1-800-257-1705 (toll-free & v/tty) or view the [OSDE- Education Services website](http://sde.ok.gov/sde/special-education): sde.ok.gov/sde/special-education

Glossary

A

- **Accessible Educational Materials (AEM)**

Accessible educational materials, or AEM, are print- and technology-based educational materials, including printed and electronic textbooks and related core materials that are designed or converted in a way that makes them usable across the widest range of individual variability regardless of format (print, digital, graphic, audio, video).

- **Accessible Media Producers**

Accessible media producers (AMPs) are services that convert materials, including textbooks and related curriculum materials, to one or more student-ready accessible formats.

- **Accessible Technology**

Accessible technology is technology that can be used by people with a wide range of abilities and disabilities. It incorporates the principles of universal design. Each user is able to interact with the technology in ways that work best for him or her. Accessible technology is either directly accessible (usable without assistive technology) or it is compatible with standard assistive technology. In the same way buildings with ramps and elevators are accessible, products that adhere to accessible design principles are usable by individuals with diverse abilities, needs and preferences. (Definition adapted from one originally shared on AccessibleTech.org.)

- **American Foundation for the Blind (AFB)**

The American Foundation for the Blind is a non-profit organization that expands possibilities for people with visual impairments. AFB has been advocating for the rights of people who are blind or visually impaired for more than 80 years.

[AFB website](#)

- **American Printing House for the Blind (APH)**

American Printing House for the Blind (APH) is the world's largest non-profit organization creating educational, workplace, and independent living products and services for people who are visually impaired.

[APH website](#)

- **Assistive Technology**

Assistive technology (AT) is any item, piece of equipment, software program, product system, or supporting service that is used to increase, maintain, or improve the functional capabilities of persons with disabilities.

- **Assistive Technology Industry Association (ATIA)**

The Assistive Technology Industry Association (ATIA) is a non-profit membership organization of manufacturers, sellers, and providers of technology-based assistive devices and/or services.

[ATIA website](#)

- **Audio**
Audio, in this context, is a digital form or representation of sound. It is a format that stores, copies, and produces sound according to the data in its file(s). Aside from music, audio formats are frequently used for non-visual access to text and images—especially via text-to-speech software.
- **Authorized Entity**
Authorized entities are referred to in the Chafee Amendment of 1996 and are defined therein as—"a non-profit organization or a governmental agency that has a primary mission to provide specialized services relating to training, education, or adaptive reading/information access needs of blind or other persons with disabilities."
- **Authorized User**
An authorized user is an agent of a coordinating agency with access to the NIMAC database who may download NIMAS-conformant files in accordance with established agreements.

B

- **BRF (Digital Braille)**
A BRF file type, also known as Braille-ready format, uses Grade II Braille and can be used with common Braille devices or Braille printers.

C

- **CAST (Center for Applied Special Technology)**
CAST is a non-profit organization that works to expand learning opportunities for all individuals, especially those with disabilities, through the research and development of innovative, technology-based educational resources and strategies. The National Center on Accessible Educational Materials for Learning is housed at CAST in Wakefield, MA.

[CAST website](#)

F

- **Free Appropriate Public Education (FAPE)**
Special education and related services provided at public expense, under public supervision and direction, and without charge mandated by IDEA.

I

- **Individuals with Disabilities Education Act (IDEA)**
Most recently reauthorized as the Individuals with Disabilities Education Improvement Act in 2004, IDEA is a federal law governing the rights of children with disabilities to receive a free and appropriate public education (FAPE) in what is termed a least restrictive environment (LRE).

[IDEA 2004](#)

L

- **LMS (Learning Management System)**
A learning management system is a software application, suite of applications, or a web-based system that provides educational programs and their components such as

classes, resources, assessment, tools, communication, etc.; as well as organizational tools for administration, record-keeping, information sharing, database management, etc., with the intention to manage all parts of a learning process.

- **Local Education Agency (LEA)**

A local education agency (LEA) is a public board of education or other public entity legally authorized for either administrative control or direction of publicly funded schools, including school corporations and state-operated schools.

- **LRE (Least Restrictive Environment)**

A Least Restrictive Environment (LRE) refers to educational settings and means, in effect, that each identified child with special needs, to the maximum extent possible, shall be educated with children who are not disabled.

N

- **NIMAS/NIMAC Coordinator (NNC)**

A primary contact for NIMAS/NIMAC-related queries and information dissemination. Each state or territory has, or will designate, one NNC to coordinate these activities within that state or territory.

O

- **Optical Character Recognition (OCR)**

OCR software scans images and translates their content into individual elements such as letters and spaces, creating text.

P

- **Print Disability**

A condition related to blindness, visual impairment, specific learning disability or other physical condition in which the student needs an alternative or specialized format (i.e., Braille, Large Print, Audio, Digital text) in order to access and gain information from conventional printed materials.

R

- **Refreshable Braille**

Refreshable braille is provided by a display or terminal that is an electronic device which raises dots or pins through holes in a flat surface. Generally, 40 to 80 braille cells are displayed at one time.

S

- **Section 504**

Section 504 of the Rehabilitation Act of 1973 is part of a civil rights law that prohibits discrimination against qualified individuals with disabilities. Section 504 regulations require a school district to provide a free appropriate public education (FAPE) to each qualified student with a disability, regardless of the nature or severity of the disability. A written 504 plan is developed to guide the provision of instructional services, including accommodations and modifications, designed to meet a student's individual educational needs as adequately as the needs of nondisabled students are met.

T

- **Tactile Graphics**

Tactile graphics are images designed to be touched rather than seen. They use raised lines and surfaces to provide the outlines of images, graphics, diagrams, maps and more. Tactile graphics are developed primarily to support individuals who are blind or have low vision.

- **Text-to-Speech (TTS)**

Text-to-speech, or speech synthesis, is the artificial production of human speech and is generally accomplished with special software and/or hardware. The quality of various speech generation engines can vary considerably. Some voices sound almost human while others sound more primitive and robotic. The robotic-sounding voices are considered desirable for achieving high rates of "reading" speed.

U

- **Universal Design for Learning (UDL)**

Universal Design for Learning (UDL) is a framework of learning and teaching based on neuroanatomy and functional neuroimaging research techniques. UDL resists a one-size-fits-all approach to education and posits instead that teachers, educators, and instructional materials should effectively respond to individual differences inherent within a learning environment. Across learning goals, methods, materials, and assessments, Universal Design for Learning encourages teachers/educators to offer:

- Multiple means of representation to give learners various ways of acquiring information and knowledge,
- Multiple means of expression to provide learners alternatives for demonstrating what they know, and
- Multiple means of engagement to tap into learners' interests, challenge them appropriately, and motivate them to learn.

Using UDL principles in a classroom removes obstacles to curriculum access and provides students with alternative methods to demonstrate what they know. It acknowledges that there is more than one way to learn and respects individual learning style differences.

[CAST's About UDL](#)

[UDL Guidelines](#)

W

- **W3C (World Wide Web Consortium)**

The W3C is an international consortium founded in 1994 to promote the evolution and ensure the interoperability of the World Wide Web. Working with the global community, the W3C produces specifications and references software for free use around the world. The W3C established the Web Accessibility Initiative (WAI) in 1997. Changing the Web's underlying protocols, applications and, most importantly, the way content is developed, can significantly improve access to the Web by people with disabilities. The WAI has working groups developing comprehensive and unified

sets of accessibility guidelines for content accessibility, browser accessibility, and authoring tool accessibility.

[W3C website](#)

References

- <https://aem.cast.org>
- <https://www.atia.org/home/at-resources/what-is-at/#what-is-assistive-technology>
- <https://maine-aim.org/what-is-a-print-disability/>