WCASS Guide for IEP teams: Supporting Students with Print Disability

January 2019

This publication is designed to assist IEP Teams in:

- **Understanding What is 'Print disability'**

- **Understanding What are Accessible Educational Materials (AEM)**

- **Determining a Student's Need for AEM**

- **Determining how and where to obtain AEM**

WCASS Guide for IEP teams: How to support Students with Print Disability

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Executive Summary

The scope of this publication is to:

- Assist IEP teams in identifying students with a print disability who need Accessible Educational Materials (AEM) in order to access, engage in, and make progress in the general curriculum, and

- Describe Accessible Educational Materials (AEM), and where and how to obtain them.

This publication addresses the following topics:

- **Understanding 'Print Disability'**. The IEP team considers how the student interacts with the printed materials. A student with a print disability is one who is unable to gain information from printed materials at an anticipated level for their grade, and needs either Accessible Educational Materials (AEM) in a specialized format (i.e., Digital text, Large Print, Audio or Braille) to access that information, or 'alternate' materials equivalent to the Wisconsin Essential Elements / Dynamic Learning Map. Important consideration should be given to barriers that may be inherent in print materials and that providing flexible options to perceive and act on that information can be valuable for students.

- A video by David Rose, CAST (Center for Applied Special Technology) Chief Scientist, proposes an intriguing paradigm shift in which the medium, the printed page is the disability.

- This is followed by an article from the Center for Applied Special Technology (CAST) addressing the printed page and the challenges it poses for a wide range of readers. This article suggest that the disability or the barrier does not reside wholly "in the student" but rather in the interaction between the child and the medium of print.

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- **What are Accessible Educational Materials (AEM)?** This section identifies the four specialized formats of AEM (digital text, audio, large print and Braille), and goes into a great detail describing each format later in the publication.

- **IDEA 2004 and AEM.** IDEA 2004 mandated (1) the establishment of the National Instructional Materials Accessibility Standard (NIMAS**)**, a technical standard used by publishers to produce source files, and (2) the establishment of the National Instructional Materials Access Center (NIMAC) to create a national repository of NIMAS source files that can be converted into Accessible Educational Materials (AEM) in four specialized formats: digital text, audio, large print and Braille for students who have an IEP and are identified as having a print disability.

- **Addressing IEP form I-4.** The IEP Team inquires

    (1) Does the student have a print disability? And if so, the Team moves on to address

    (2) What specialized format(s) does the student need ? In this process, the IEP team also must consider the student need for Assistive Technology support.

- **Indicators / Characteristics of students who have a print disability.** Learning Ally, a major US Accessible Media Producer (AMP) provides a detailed description of indicators/characteristics of students who have a print disability and are eligible for AEM

- **Where in the IEP should AEM be referenced ?** This section includes a description of seven (7) IEP components that AEM may be referenced, as well as examples of each component.

- **The IEP team considers appropriate training and supports for AEM use.** To ensure

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effective use of AEM, it is recommended to conduct training to support the student, school staff and the family in the understanding and usage of AEM.

- **What is Digital Text, Audio, Large Print and Braille.** Including a detailed description of the four (4) specialized formats of Accessible Educational Materials (AEM).

- **Where and how to acquire Accessible Educational Materials (AEM).** The various sources available to IEP teams to obtain Accessible Educational Materials as well as how to obtain them.

- **Information for parents and families.** This publication includes information for parents and families about 'print disability' and the use of Accessible Educational Materials (AEM).

- **General Resources.** Multiple resources to assist the reader in obtaining additional information on Accessible Educational Materials.

Introduction: What is a Print Disability? [1]

A print disability is NOT a new disability classification, but refers to the functional ability of a student with a disability such as blindness, low vision, learning disabilities or physical disabilities. A print disability is easiest to understand when considering how the student interacts with printed materials. A student with a print disability is one who is unable to gain information from printed materials at an anticipated level for their grade, and needs either Accessible Educational Materials (AEM) in a specialized format (i.e., Braille, Large Print, Audio, Digital text) to access that information. Print disabilities commonly affect students with blindness, visual impairments, learning disabilities or physical conditions that make it difficult to hold a book or turn a page. The indicators of a print disability may include, for example, the student cannot decode letters and words at or near grade level, the student cannot read with fluency at or near grade level, the student cannot see the information, or the student cannot hold the book and turn its pages. The IEP team determines whether the student has a print disability.

[1] According to the Maine Center for accessible instructional materials (https://maine-aim.org/what-is-a-print-disability/

David Rose Video In this video, David Rose, CAST (Center for Applied Special Technology) Chief Scientist describes how the medium itself, the printed page can become a barrier, an actual disability for some students.

Video: The Disability is in the Medium - David Rose

https://www.youtube.com/watch?v=5JgY3z3nxgc

Excerpt from CAST (Center for Applied Special Technology) on Print and Its Disabilities[2]

In most contemporary classrooms, print remains the primary technology for communication and instruction. Print assumed this position because of its obvious advantages: it is an ideal storage and display medium for information that can be encoded in text or in static images. Thanks to Johannes Gutenberg, print is an inexpensive and portable way to convey the narratives and knowledge of our culture.

As a platform for student-centered learning, however, print is far from ideal. It is a fixed, inert, standardized, "one size fits all" medium—perfect for any classroom in which

students are essentially alike. Unfortunately, no classroom is like that. Moreover, the challenge (and opportunity!) of diversity is increasing in the modern era because our culture has demanded education that is more equitable and inclusive—reformed to include not only wealthy white males but women, minorities, people who do not own land, individuals with disabilities, and English language learners.

Print is a poor fit for such diversity, but with no obvious alternatives, students and teachers have adapted to its limits. Classrooms are textbook centered rather than student centered because students, rather than their textbooks, have seemed more adaptable, flexible, and malleable.

But not all students are malleable enough. For some, the structure of print not only fail to provide a useful platform for student-centered learning but instead impose rigid barriers. For students who are blind, for example, rendering verbal information into print makes it entirely inaccessible.

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[2] CAST (Applied Special Technology) notes the weaknesses and challenges of the printed page (http://www.cast.org/w/page/jff/l8?9#l8):

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For blind students, the limits of print are so onerous that the need for alternatives became obvious as soon as alternative technologies were available. By 1931, when audio recordings and Braille editions were possible, Congress mandated that alternatives to print must be provided to individuals who are blind, have poor vision, are physically disabled, or have organically based reading disabilities. In recent legislation, Congress has used the new term "print disabilities" to convey the challenges these individuals face. This term is now prominent in federal and state legislation and will soon affect every school and classroom in America. It represents a <u>watershed</u> in education, a harbinger of the future that will have profound effects on the ways we understand what it means to have student-centered learning.
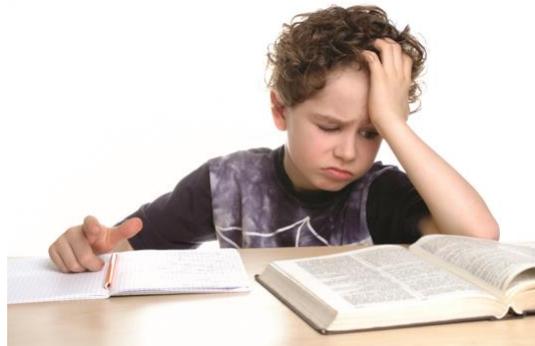
The revolutionary aspect of the term print disabilities is a subtle but remarkable shift in focus. While most labels solely reflect the role of the individual— identifying disability in their personal handicaps or weaknesses—this new term emphasizes the role of the learning environment, specifically the environment of print. The handicap is recognized as not residing wholly "in the child" but rather in the interaction between the child and the medium of print. Print plays some role in who is, or is not, called disabled.

For most of the 500 years since Gutenberg invented the printing press, this focus would have seemed very strange. During that time, the dominance of print for literacy and learning was so complete that its strengths completely overshadowed its weaknesses. Unlike any

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previously available form of communication, print was durable, able to be shared in exact form, and made widely available information that was previously available to a select few.

For some individuals, however, print's weaknesses have always been much more obvious. As alternatives began to emerge (e.g., voice recordings; refreshable Braille devices; digital talking books), print's weaknesses became apparent. As these alternatives became more common, the inaccessibility of print was eventually recognized as an injustice. Laws were enacted to ensure that every student with print disabilities could have an accessible alternative. Currently, technology affords flexibility (in some cases) that was not previously available, so the design of the environment with some flexibility can take some of the burden off the student.

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These requirements, which apply to every public school in America, represent an important shift in responsibility for providing materials that are, indeed, student centered. However, the laws apply only to students with print disabilities. Advances in educational technologies far beyond Braille and audio books foreshadow a much broader shift in what it means to be student centered.

What are Accessible Educational Materials (AEM)

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 student variability regardless of format (print, digital, graphical, audio, video). The term Accessible Educational Materials (AEM) is used interchangeably with the term Accessible Instructional Materials (AIM).

The four major ways (also called Specialized Formats) these materials are formatted / converted include (See pages 29-48 for a detailed description):

- Digital text
- Audio
- Large print
- Braille

A provision in the Individuals with Disabilities Education Act of 2004 (IDEA) established the National Instructional Materials Accessibility Standard (NIMAS) 34 CFR 300.172(a)(1). NIMAS is a technical standard used by publishers to produce source files in XML (eXtensible Mark-up language) that may be used to develop specialized formats, such as Braille or audio books, for students with print disabilities.

The National Instructional Materials Access Center (NIMAC) is a federally funded, online repository of NIMAS files from publishers that can be converted into specialized formats such as

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audio, Braille, large print, or digital text files for students with individualized education programs (IEPs) who have a print disability, including those who are blind or visually impaired, learning disabled or physically disabled.

IDEA 2004 and AEM

A provision in the Individuals with Disabilities Education Act of 2004 (IDEA) established the National Instructional Materials Accessibility Standard (NIMAS) 34 CFR 300.172(a)(1). NIMAS is a technical standard used by publishers to produce source files in XML (eXtensible Mark-up Language) that may be used to develop specialized formats, such as Braille, Audio, Large Print or Digital Text.

The National Instructional Materials Access Center (NIMAC) is a federally funded, online repository of NIMAS files from publishers that can be converted into specialized formats such as Braille, Audio, Large Print or Digital Text files for students with Individualized Education Programs (IEPs) who have also been identified by the IEP team with a print disability. These students include students who are blind or visually impaired, students who have Reading Disabilities or physical conditions that make it difficult to hold a book or turn a page.

Due to copyright laws, textbook and other core material files may only be used to create specialized formats for the eligible students for whom the material was requested. These are students who are served under IDEA and are certified by a competent authority to have a qualifying print disability. See Department of Public Instruction Bulletin 18-03 for more information.

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How Does the IEP Team determine if a student has a Print Disability and need AEM? (This is a two-step process):

Step 1: the IEP team considers the question **"**Can the student learn and gain information from the same print-based and other instructional materials selected for use by all students"? If the answer is "no", the student has " print disability". The IEP Team may record the existence of a "print disability" on the "Disability Related Needs" section of the I-4 IEP form (Linking form).

The following print disability indicators are just a few examples when a student may not be able to effectively use standard print-based materials in the general curriculum, thus has a print disability and needs one or more specialized formats of Accessible Educational Materials (check Learning Ally below for additional examples).

Print Disability Indicators:

- The student cannot decode letters and words at or near grade level;
- The student cannot read with fluency at or near grade level;
- The student cannot see the information;
- The student cannot hold the book and turn its pages

Learning Ally, a major US Accessible Media Producer (AMP) provides a more detailed description of indicators/characteristics of students who have a print disability and are eligible for AEM[3]:

These characteristics should not determine eligibility in isolation. An IEP Team must evaluate and determine qualification through assessments, observations, and a review of

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[3] http://www.learningally.org/Portals/6/Docs/TeacherResources/Eligibility%20Guide-2%20Page.pdf

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student work and must be consistent enough to impede accessing and making progress in the general education curriculum and making grade level standards.

- **Phonemic Awareness**
  Lack of understanding of the explicit correspondence between sounds and letters or letter combinations

- **Phonics**
  Unable to blend sounds together to form words

- **Decoding**
  Inability to rapidly match letters and letter combinations to their sounds and recognize the patterns that make syllables and words

- **Fluency**
  Struggle with accuracy, automaticity, and rate of reading — oral reading lacks intonation with deficiencies in understanding phrasing and pausing

- **Vocabulary**
  Lack of exposure to an increased number of words because of the inability to read standard print

- **Comprehension**
  Inability to decode words, fully understand and decipher what is read due to unmastered reading skills, not an intellectual deficit

- **Prosody**
  Lack of understanding and difficulty understanding the rhythm and patterns of accent and intonation in language

- **Access to Grade Level Content**
  Unable to access grade level materials because of a learning disability or characteristics of a learning disability

- **Executive Functioning**
  Struggles with the set of processes that have to do with managing oneself and one's resources

- **Reading Motivation and Stamina**
  Displays a lack of motivation, the desire and drive to read, and stamina — the ability to read for an extended period of time, not

because of willingness or interest, but because reading skills have not been
mastered

• **Social/Emotional**
Avoids reading tasks for fear of embarrassment and shame over academic
struggles, exhibits anxiety or frustration, and/or appears distracted or unfocused

Step 2: After determining the existence of a "print disability" in step 1, the IEP Team now
moves on to determine what specialized format(s) the student needs**.** In addressing the
IEP Linking form, I-4, item 5 of the Special Factors section, the IEP team considers: *"Does
the student need assistive technology services or devices, including any services or
devices needed to assist with reading? Consider the need for accessible education
technologies or materials available to students regardless of formats or features, including
NIMAS files from the National Instructional Materials Access Center (NIMAC)".*

In considering the above paragraph, the IEP team needs to distinguishes between:

• Assistive technology services or devices needs, and

• Accessible Educational Materials needs

Assistive technology services or devices - The IEP team must consider
whether the student needs Assistive Technology (AT) devices or services. For
example, some students may need AT devices or services to access grade-

level reading content. These may include augmentative communication, iPads, input and output devices, alternative access aids, modified or alternative keyboards, switches, etc. The IEP team describes the student's needs and document any needed services in the *Program Summary*. For more information, please visit: http://dpi.wi.gov/sped/educators/consultation/assistive-technology

Another good tool to review is Joy Zabala's[4] SETT Framework. The SETT Framework supports a thorough yet simple approach to assistive technology assessment and intervention.

Accessible Educational Materials (AEM). The IEP team determines that the student cannot gain information from the print-based materials, and in order to make adequate progress in the general education curriculum, the student requires exactly the same content in one or more specialized formats (Digital Text, Audio, Large Print or Braille).

▪ **An indicator that students could learn to use a specialized format effectively:** An indicator for using AEM is that the student understands the content of print materials when the information is presented in another format. For example, when printed material is read aloud to the student, the student understands the content and can use the information. A specialized format of a print-based material includes exactly the same content as the printed material. The specialized format does not change the content, only the way in which the content is presented to the student.

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[4] http://www.joyzabala.com/uploads/Zabala_SETT_Leveling_the_Learning_Field.pdf

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When the IEP Team determines that the student needs Accessible Educational Materials (AEM), the IEP Team needs to consider which specialized formats or a combination of specialized formats will meet the student's needs. These AEM may be obtained from various sources including NIMAS files, from which student-ready AEM files can be rendered. The Major Accessible Media Producers (AMPs) that provide these materials to schools include Bookshare, Learning Ally, American Printing House (APH), Wisconsin Talking Book and Braille Library among others. A detailed description of these Accessible Media Producers (AMPs) are available on pages 49-51 of this publication.

Please see Department of Public Instruction Bulletin 18-03 for more information. School districts have an obligation under IDEA to ensure the timely provision of accessible educational materials (AEM) or accessible instructional materials (AIM) (terms used interchangeably) to all students with disabilities who may need it in order to access, engage in, and make progress in the general curriculum. Because of the limitations on who can access NIMAS materials through the NIMAC, there are students with disabilities (who have not been identified by the IEP Team as having a print disability by a competent authority) that may still require AEM/AIM but cannot receive them through NIMAC. These students must still be provided with AEM/AIM in a timely manner and from other sources. Please see pages 48-61 of this publication for more information.

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AIM Explorer:
A Screening tool for the IEP Evaluation: How to determine which digital text features are appropriate?

The term AIM (Accessible Instructional Materials) is often used interchangeably with AEM (Accessible Educational Materials). The AIM Explorer, a free, downloadable software simulation tool), developed by the AEM Center, combines grade-leveled digital text with access features common to most text readers and other supported reading software. As you can see from the screenshot below, it includes features as avs magnification, custom text and background colors, text-to-speech (synthetic and human), text highlighting, and layout options are presented in a logical sequence to help struggling readers, educators, and families decide which of these supports might enable the student to access and understand text. The AIM Explorer can be downloaded from the AEM Center web site at http://aem.cast.org/navigating/aim-explorer.html. See visual below.
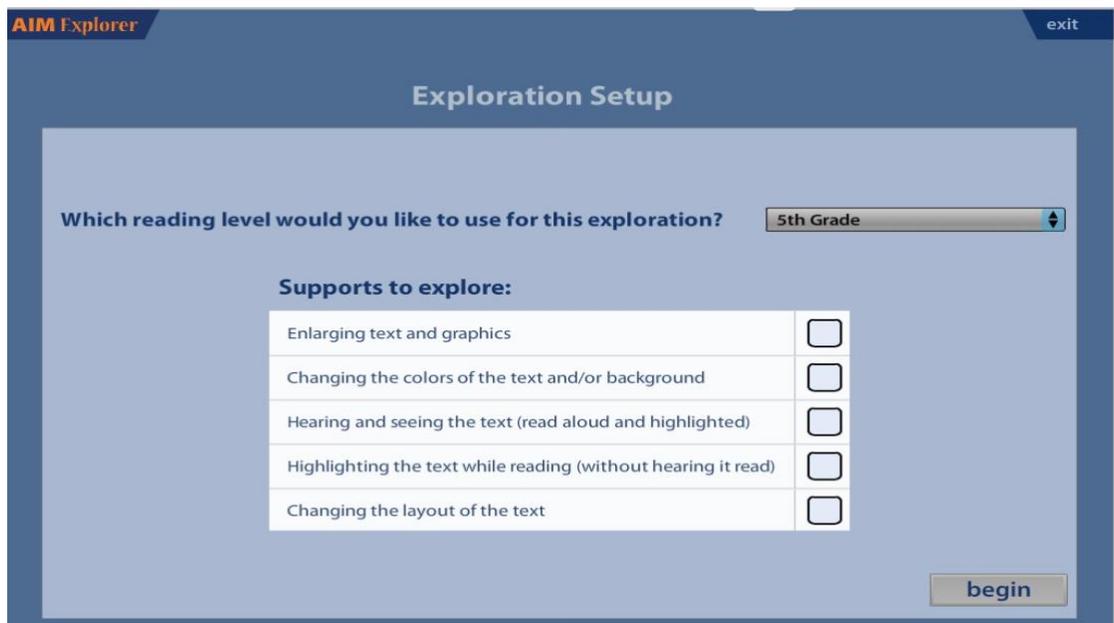
What are the qualifying criteria for students with disabilities to receive AEM originated from NIMAS Filesets

There are two (2) qualifying criteria for students to be eligible to receive materials that originated from NIMAS filesets:

1. a print disability determination by a competent authority: a disability that interferes with accessing or learning from a print book;
2. receiving special education services through an IEP.

See Department of Public Instruction Bulletin 18-03 for more information.

Who is a 'competent authority' to obtain AEM?

Accessible Media Produces such as Learning Ally or Bookshare, key providers of AEM in the US note that any of the following IEP Team members can be a competent authority to certify that a student with disability has Print Disability and requires the provision of AEM from Accessible Media Produces (AMPs).

- Special Education Teacher
- Reading specialist
- School psychologist
- Physician

While this "Competent Authority" list is limited to IEP Team participants and Physicians, both Bookshare and Learning Ally have more extensive lists of who can function as a "Competent Authority".

Requests by IEP Teams made to the National Library Service for the Blind and Physically Handicapped (NLS) on behalf of Learning Disabled students for Specialized Formats,

require the "Competent Authority" to be a Physician. Please check link:

https://www.loc.gov/nls/about/eligibility-for-nls-services/

Where in the IEP should AEM be referenced?[5]

The IEP serves as a roadmap to help teachers provide instruction. The IEP is both a document describing the services the student will receive and a platform which enables the educators, parents, and students to work together to develop an individualized plan. While there is no specific requirement in IDEA regarding the consideration of AEM or where it should be documented in the IEP, there are specific components of the IEP where it is

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[5] http://aem.cast.org/binaries/content/assets/common/publications/aem/aem-iep-brief-2018.pdf

appropriate to refer to a student's use of accessible materials and technologies. These include the following:

1. Present Levels of Academic Achievement and Functional Performance
2. Special Factors
3. Measurable Annual Goals
4. Special Education and Related Services, Supplementary Aids and Services, Program Modifications, and Supports
5. Participation Summary of Evaluation Results
6. Statewide Assessments
7. Postsecondary Goals and Transition Services

Below are examples of IEP statements regarding the use of AEM in each of the above IEP components.

a) **Example of AEM IEP Statement for Summary of Evaluation Results:**

> "Sean is a seventh-grade student who has been previously identified as having a specific learning disability. According to the most recent evaluation data reviewed by the team, Sean understands grade-level content but is unable to independently derive meaning from print-based materials. These data suggest that Sean may need a specialized format of printed materials and assistive technology. Further evaluation data indicate that to participate and progress in the general education curriculum, Sean will require a digital text format of printed materials and accessible technology-based materials that enable him to see and hear the content at the same time. This feature, called "text-to-speech," provides him with audio-supported reading"

b) **Example AEM IEP Statement for Present Levels**

> "Sean is a seventh-grade student who has a specific learning disability. He understands instructional content at grade level but is only able to read printed materials independently at the fourth-grade level. When using classroom computers and supported reading software with the text-to-speech feature, Sean successfully perceives and interacts with digital text formats of grade-level printed materials and other digital media materials across the content areas".

c) Example AEM IEP Statement for Special Factors

> "Sean understands educational content at grade level but is unable to read independently with sufficient accuracy and fluency to support comprehension at that level. Sean needs materials provided in a digital format to access the general curriculum. He will need a tablet and/or other computer with text-to-speech and word prediction capabilities to perceive and interact with digital text formats of grade-level printed materials".

d) Example IEP Statement for Measurable Annual Goals

> "By May 2018, when using a digital text format of the seventh-grade social studies textbook, Sean will identify examples of sequential, comparative, and causal presentations of information in text with 80% accuracy.

e) Example IEP Statement for Special Education and Related Services, Supplementary Aids and Services, Program Modifications, and Supports

- "Sean will use a tablet computer that provides simultaneous visual and auditory output to support perception of and interaction with digital text formats of grade-level printed materials and technology-based materials across content areas.
- Sean will receive training in how to use the digital text format and technology for participation and achievement.
- Sean's teachers and parents will receive training to support his use of the materials and technology.

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- Sean will require headphones and preferential seating in a quiet area of the classroom when he is reading with text-to-speech".

f) Example IEP Statement for Participation in Statewide Assessments

"Consistent with the accommodations that Sean is using in the classroom, he will receive the following accommodations on statewide assessments:

- Read-aloud: Simultaneous visual and auditory access to text through the independent use of text-to-speech for all allowable parts of the assessment
- Scribe: Text input through independent use of word prediction software for all allowable parts of the assessment".

g) Example IEP Statement for Transition Planning Goals

Sean will learn to advocate on his own behalf in determining:

- o when he needs to use a specific specialized format and what technology works best for him in different contexts with different materials.
- o Sean will build the self-determination skills needed to advocate for his specialized formats needs in postsecondary environments by leading discussions during IEP development .

The IEP Team considers appropriate training and supports for the use of AEM/technology [6]

1. **What training for the student, educators, and family may be needed for the student to use the materials effectively?**

    Different levels of training will be needed depending on the complexity of the technology or tool selected to access the specialized format(s). For example, use of a large print book would not require much training. However, if the student is using text-to-speech software or a screen reader to access digital text, more advanced skills may need to be taught. Teachers, other school staff, and families may also need training in order to support the child at school and in the home. Students may also need additional types of training such as when to use a particular format or tool for a specific learning task.

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[6] Based on the AEM Navigator, 2015 http://aem.cast.org/about/publications/2015/accessible-educational-materials-navigator-print.html#

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2. **What instructional strategies may be needed for the student to use the materials effectively?**

    Educators may need to use various instructional strategies to support students using specialized format(s) and supporting technologies. When a student first begins using these tools, instruction should include multiple opportunities for the student to understand the purpose, benefits, and outcomes of using the tools. It is helpful to start by providing opportunities for the student to use the tools to successfully complete familiar learning tasks (possibly in a single environment). Gradually building on early successes and increasing the functional complexity of the tools will enable the student to learn to use the tools for independent mastery of learning goals in a variety of environments. The student's IEP team members should work together to ensure that teachers and staff are coordinating to assist the student in using the accessible materials and to monitor any change in literacy skills and access.

3. **What support services may be needed for the student to use the materials effectively?**

    The student's IEP should describe any support services needed for effective use of various specialized formats and specify who is responsible for providing them. Different support services may be needed for different formats. For example, a student using braille may require specialized instruction from a qualified teacher of the visually impaired and a student with a physical disability may need the support of an occupational or physical therapist. Additional supports such as case management, classroom organization and

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arrangement, equipment management and maintenance, and file acquisition may be needed.

4. **What accommodations and/or modifications may be needed for the student to use the materials effectively?**

The use of AEM may require accommodations and/or modifications to the student's educational program. For example, a student may need preferential seating or additional time to complete tasks due to the time required to use a specialized format. Frequent breaks may be needed to prevent fatigue. Some students may need to provide responses orally rather than in writing. The team should consider which accommodations and/or modifications are needed when developing the IEP. If students are using an audio-only format for an open-book test, they may also require the assistance of a human reader to locate information in a timely manner.

What is Digital Text?[7]

Digital Text is an electronic format that can be delivered via a computer or another device. Digital text is malleable and can be easily transformed in many different ways depending upon student needs and the technology being used to display the content. Various features of the technology which control how the content can be manipulated include size, fonts, colors, contrast, highlighting, dictionaries, thesauruses and text-to-speech. The digital text format may contain both audio and visual output depending upon the way the content is developed and the technology that is being used.

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[7] AEM Navigator, Print version, May, 2015), http://aem.cast.org/about/publications/2015/accessible-educational-materials-navigator-print.html#

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**What tools are traditionally used with digital text formats?**

There are three main ways the digital text format can be rendered and provided to a student in a student-ready format.

1. The first way involves computer software and some stand-alone hardware that reads text aloud using synthetic speech, often referred to as text-to-speech or TTS. There are both free and commercially available products that provide (text-to-speech) TTS. The ability to turn TTS on is also included in the operating systems of most computers. Some TTS software programs also include learning supports and are referred to as supported reading software. Image files are typically included with digital text. Additional software that allows the menu choices to be read may be needed by blind or visually impaired students. Descriptions of images may or may not be included in the electronic files, and thus may need to be provided by a human reader if not available for students who are blind or have low vision**.**

2. The second way digital text is rendered is as Digital Talking Books (DTBs). These digital files can be downloaded to a Braille and Audio Reading Download (BARD) Player from the National Library Service, other commercially available devices, and apps for iOS devices in order to access text.

3. The third way consists of commercial digital texts or e-books (electronic books). Some of these offer embedded read-aloud functionality. There are many features of the extremely flexible digital formats that can be changed to meet the needs of the student depending on how the e-book is designed. Most can be manipulated to increase the font size or customize style. Text and background color can be changed. Digital text can include hyperlinks to add additional content such as definitions, background information, or prompts". Some e-books include descriptions of images for those with vision loss.

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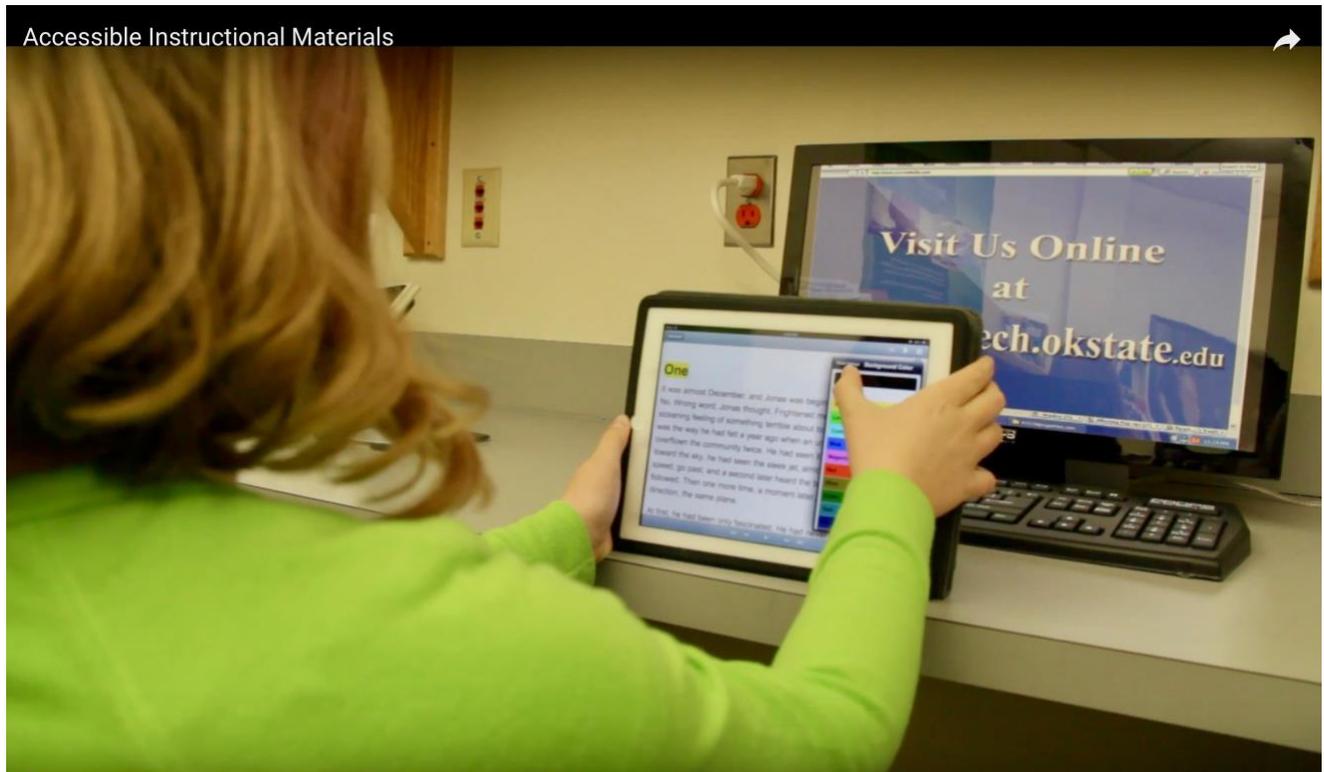
For students who use braille, digital BRF (Braille Ready Format) files may be available that allow the student to read braille via the use of a refreshable braille display.

What output features of digital text formats are important?

Output is what a user hears and sees on the computer screen and the available features are related to the technology being used. The following are some of the features that may be manipulated:

- Font size/type/color
- Background color
- Synchronized highlighting as text is read
- Text-to-speech
- Voice speed and pitch
- Navigation
- BRF (Braille Ready Format) files for Braille readers

What is supported reading software?

When learning supports are designed into a program that renders digital text, the software is often referred to as supported reading software. Learning support features may include—

- Find/search
- Bookmarking
- Note taking
- Text highlighter
- Generation of an outline from highlighted text
- Audio notes
- Dictionary/thesaurus
- Links to multimedia

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Benefits of providing curriculum materials in a digital format:

Unlike print-based curriculum materials, which are fixed, digital curriculum materials are flexible (for students who are not Visually Impaired / Blind). Thus they can be easily modified to provide students with multiple means of accessing the content. A benefit of providing curriculum materials in a malleable digital format is the ability to include options such as—

- Text-to-speech decoding and comprehension support

- On-demand reading aloud of typed responses

- Options to customize text font size and layout

- Multimedia glossary to provide vocabulary support

- Learning supports and study skill supports built-in the software

Please note how these flexible options can be made available for all students, thereby making the design of the learning environment more personalized and flexible from the beginning. Universal Design for Learning encourages educators to design learning environments that offer flexibility in how information is represented and in how students can show what they know- which incorporates many of the AEM strategies.

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Also, It should be noted that in order to enable some digital materials to be fully accessible for students who are blind or visually impaired, additional screen enlargement and/or voice output software may need to be installed on a designated computer.

Maine–AIM (Accessible Instructional Materials) on Digital/Text[8]

Digital or E-text are electronic files containing the content of textbooks and instructional materials in a format than can be viewed and accessed by a number of digital devices. When used with certain assistive technologies (AT) the digital text can be highlighted (selected with a mouse or a keystroke combination) and read aloud by synthetic speech (text-to-speech). For high quality Accessible Educational Materials (AEM) Digital Text, content should be appropriately "tagged" to identify the parts of the document including titles, headings, and alternative descriptions for images

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[8] https://maine-aim.org/selectionacquisition-of-aim/acquiring-digitaltext-aim/

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What is Audio Format?[9]

Audio formats render content as speech to which a student listens. Audio formats include recorded human voice, while digital text references synthetic speech.

One example why would IEP Team members consider an audio format for a student?

Students who have difficulty with reading text or who spend a great deal of time trying to decode text may benefit from the use of auditory text. By listening to content, students can reduce the cognitive load of trying to read text and can focus on comprehension of the information. Decisions are made based on a student's needs, the environments in which tasks will be completed, and the nature of tasks the student needs to accomplish.

What output features of audio formats are important?

The major features that IEP Teams should focus on are voice, navigation within a file, and supported study skills. For audio format, output means how the voice sounds to the listener. Output features describe the ways that speech can be adjusted or modified when using audio format. Audio output may be a recorded human voice or synthesized speech. There are many ways in which the speech output can be adjusted, whether the speech is recorded human voice or synthesized speech. Adjustments can be made in the pitch, the volume, and the speed at which speech is presented.

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[9] AEM Navigator, Print Version, May, 2015) http://aem.cast.org/about/publications/2015/accessible-educational-materials-navigator-print.html#

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What characteristics of audio formats influence which outputs are selected?

IEP Teams should consider whether the student needs or prefers the audio to be recorded human voice or whether a synthesized or computer-generated voice is acceptable. Output is selected depending on the personal characteristics of the student, such as age, level of experience with the format, and tasks to be completed with the instructional materials. It is important to include the student collaboration in the selection of material for different contexts.

Although natural human speech may sound better, many users prefer the flexibility of synthesized speech for some tasks. While both recorded human voice and text-to-speech may be set to read faster or slower, some text-to-speech voices have the advantage of maintaining clarity when set to higher rates. Additionally, not all printed materials have been reproduced in human speech. Students who need to have specific materials in order to access the general curriculum may need to learn to become comfortable with computer-generated voice.

What navigation features of audio formats are important?

Audio books that conform to the **DAISY** (Digital Accessible Information System) standard for digital talking books (DTBs) have important navigation features that allow users to move around the recorded speech files easily. **DAISY** (Digital Accessible Information System) is a technical **standard** for digital

audiobooks, periodicals and computerized text. Based on the MP3 and XML (eXtensible Mark-up Language) formats, the **DAISY** format has advanced features in addition to those of a traditional audio book.

Navigation is similar to a table of contents and allows users to jump to elements such as chapters, sections, pages, paragraphs, and sentences. The ability to navigate DTBs easily provides many benefits compared to regular audio books without navigation

What other features are important to consider with audio formats?

Bookmarking and highlighting of audio and the ability to label sections with text and/or audio notes are important to consider for some students.

How does audio lend itself to use in multiple environments and for multiple tasks?

Some students may actually use different audio formats for different reading tasks. For example, it may be perfectly acceptable for a science book to be read with a synthesized voice but when a literary work is studied for a literature class a human voice may be more useful. Depending on the task or context, an individual may make a different choice.

What is large print?[10]

Large print is generally defined as print that is larger than the print sizes commonly used by the general population (8 to 12 points in size). Some use a guideline for defining large print as 18 point or larger. See APH (American Printing House) guidelines below[11]. A document rendered in large print format usually has more white space and may or may not look like the original document but contains the same information. Large print may be printed on pages that are the same size as a standard textbook page or on pages of a larger size.

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[10] AEM Navigator, Print Version, May, 2015) http://aem.cast.org/about/publications/2015/accessible-educational-materials-navigator-print.html#

[11] https://www.aph.org/tests-and-textbooks/large-print/

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What is important to understand about this specialized format and how people use large print?

Large print can be an effective reading medium for students with low vision, who are unable to use typical print size for efficient reading, to access textbooks and other instructional materials. Large print is generally defined as print that is larger than the print sizes commonly used by the general population, which is 8 to12 points in size. American Printing House (APH) large print textbooks use 18-point type as the minimum font size along with larger font sizes for multi-level headings. Sidebars, footnotes, page numbering and graphics will all be handled in a new fashion that will be more helpful to low vision readers. Students who need to use large print larger than the standard 14-18 point font may need to use other assistive technology or have custom produced materials).

ALL THE LATEST BOOKS IN
LARGE PRINT FORMAT

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Why would IEP Teams consider the large print format for a student?

For a student with low vision who uses print for reading and writing, the IEP team considers the use of large print through an evaluation process to determine the print media the student will use to develop literacy skills. This objective evaluation process (which is similar to the process used to determine the use of braille) includes information from a variety of sources, such as a clinical low vision evaluation, a functional vision assessment, and a learning media assessment emphasizing print media and efficient reading skills. A variety of factors are included in the decision-making process such as eye condition, type of vision loss, reading speed, comprehension, print size, availability, portability and individual student goals.

When large print will provide the student with the best means to develop literacy skills and to access a variety of print materials, then the IEP team chooses large print as the student's learning medium. It may be the student's primary or secondary learning medium depending on task and context. For example, large print may be most appropriate for a print textbook, but not necessary for access to electronic text where many print features can be adjusted and customized to student preferences. For example, a student may need large print music in order to participate in choir, but may be able to access their textbook on a computer or tablet using enlarged text provided by external software or features built into the device itself.

The research regarding print characteristics affecting reading speed and reading efficiency for people with low vision is ongoing. The professional literature suggests that in addition to print size, factors such as type of vision loss, visual skills, print layout, cognitive demands, and processing demands influence reading speed.

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What characteristics of the large print format should decision-makers think about when considering this format for a student?

When an IEP team determines that large print is the most appropriate method for a student to read, the team needs to consider all aspects of providing access to textbooks and other instructional materials. For example, in the early grades, print material in educational materials is generally provided in a larger print size, which may be sufficient for the student's access. As a student progresses through the grades, ongoing monitoring of print characteristics and reading efficiency needs to occur to ensure appropriate use of large print materials.

In addition to large print, other factors affecting visual access need to be considered for a student using large print. For example, variables such as contrast, clutter, and spacing in print presentation of text may affect a student's ability to read efficiently. This aligns with UDL (Universal Design for Learning) Engagement Guidelines, Options to minimize threats and distractions.

Students also need to be proficient in using a variety of visual illustrations such as photos, maps, graphs, and charts used in teaching and learning activities. They need to know how visual illustrations should be presented for efficient visual access and the most effective way to access graphic information.

What output features of the large print format are important?

In today's learning environments, students are reading printed text on paper and displayed text on computer screens as well as on a variety of other electronic tools and devices. Some people refer to text on paper as large print and text displayed on electronic tools as enlarge text. Students requiring large print or enlarged text are likely to need to become

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proficient in reading textbooks and learning materials in a variety of media and output features.

It is also important to understand the role of magnification devices and tools to provide access to print as magnified output. It is common and supported in the research and professional literature that accessing typical print through devices and tools that magnify print and text is an efficient and effective way for many students with low vision to read and write. These devices and tools may be prescribed low vision devices such as magnifiers or non-prescription devices such as additional lighting. There are computer-based tools such as software and hardware solutions that enable large text and other electronic tools such as electronic magnifiers, both portable and desktop (commonly referred to as closed-circuit TV, CCTVs or video magnifiers) that enlarge print. In addition, the accessibility features built into computer platforms have many options that students can use to increase the size of visual presentation and readability of the text.

What characteristics of large print and large text formats influence which outputs are selected?

There are benefits to using a variety of outputs when large print is used. Using large print in textbooks gives the student immediate access to the same materials classmates are using and allows the student to participate in teaching and learning activities in the same manner as all students. Viewing print through the use of magnification devices and tools can provide additional visual access to materials, such as maps that contain detailed and embedded graphics.

Viewing text on a computer screen gives a student with low vision the ability to customize text size and other features of text to personal preferences using specialized software

programs or accessibility features available in the computer's platform. Some commercially available devices allow the student to reduce the amount of visual clutter on a page or to increase the while space between characters. Research also suggests that a person's subjective preferences influence the outputs they may want to use for access to print and text

Another benefit to using electronic tools for viewing text is the ability of some specialized software programs to provide the additional output of speech. Similar to using speech with braille, speech access with enlarged print can work in combination to increase a student's reading efficiency.

What are the considerations for large print for use in multiple environments and for multiple tasks?

Similar to braille, the need to use large print in many contexts and for specific purposes influences a student's choices and methods of use. Typical large print textbooks have a history of being criticized for their size and weight. However, many current large print textbooks are produced in a size typical of all textbooks so they are portable and student "friendly."

Viewing print with hand-held portable magnification devices gives students the flexibility and independence to access print in an enlarged format in multiple environments, such as school, home, and in the community. The use of electronic methods to enlarge print also provides the flexibility to view print for multiple tasks, such as word processing and use of a variety of electronic media. When considering learning tasks such as conducting research and using reference tools, using electronic tools with access to the Internet gives students access to content in a preferred print size.

What is Braille?[12]

Braille is a tactile system of reading and writing made up of raised dot patterns for letters, numbers, and punctuation marks and characteristics of print such as bold or highlighted text. This format is used almost exclusively by people with visual impairments. Braille may be either embossed (a permanent printed document) or refreshable (electronically generated and accessed via a braille display device). Braille is commonly described as a system of touch reading and writing for people who are blind. Braille uses embossed or raised dots arranged in a six dot cell to represent print characters. A multitude of different characters can be systematically formed in the six dot cell to create letters, numbers, punctuation marks, and combinations of letters and words called contractions. Braille is considered a code rather than a language; any language can be conveyed in braille.

The process of learning to read in braille is similar to learning to read and write print,people use the fingers of both hands to read from left to write over a line of braille using very little pressure with their fingers to touch the braille dots. Tactile perception and discrimination skills are important for efficient braille reading. So, too, are smooth, coordinated hand tracking motions.

Why would the IEP Team consider the braille format for a student?

When braille provides a student with a visual impairment with the best means to develop literacy skills in order to access information, communicate efficiently and independently, and participate in all educational activities, then the IEP team chooses braille as the student's primary learning medium. This decision is based on a systematic and objective evaluation process. The IEP team may also determine that the student benefits from learning or using Braille as a secondary reading medium, in addition to print or audio materials, especially for students who have a future need for braille.

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This evaluation process includes information from a variety of sources, such as a clinical low vision evaluation, a functional vision assessment, a learning media assessment, and the student's progress in the educational program. The IEP team analyzes and considers the information in a variety of contexts, including the student's current and future needs.

What characteristics of the braille format should decision-makers think about when considering this format for a student?

Once an IEP team determines that braille required for a student, the team needs to consider all aspects of providing access to textbooks and other instructional materials. For example, with a beginning braille reader it must be determined if the student will initially learn braille in an uncontracted form (letter-by-letter representation) or in contracted form (use of special characters to make words shorter). The IEP team must also take into account changes in the braille code itself.

UEB – Unified English Braille and Wisconsin (from WCBVI Outreach 2018)

The United States adopted Unified English Braille (UEB) as its official braille code on January 4, 2016. Wisconsin decided to begin the transition in September 2015 to provide a smoother flow for the school year. Following the Braille Authority of North America (BANA) statement made on November 9, 2014, that "as of the implementation date in 2016, UEB, Nemeth (see description at end of paragraph), Music, and the International Phonetic Alphabet (IPA) will be the official codes for use in the United States," Wisconsin officially maintained the Nemeth Code as the means for reading and writing mathematical and scientific material, unless and until BANA changes its position.

More information on braille, UEB, and Wisconsin's path during this historical time can be found at these links:

http://brailleauthority.org/index.html

http://www.wcbvi.k12.wi.us/outreach/braille-information

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Beyond, UEB and Nemeth Code, students progressing in the curriculum will need to learn about other braille codes such as the music code and foreign language codes that are not represented in UEB. The Braille Authority of North America's web site is a resource that promotes literacy for tactile readers through standardization of braille and/or tactile graphics. Students also need to develop proficiency in interpreting tactile graphics in order to understand visual illustrations used in teaching and learning activities. Tactile graphics are images, such as maps, charts, and graphs that are designed to be interpreted by touch. The Tactile Graphics web site provides extensive resource information on the design and production of braille graphics.

With the recent adoption of the Unified Braille Code in the US, conventions for inserting and appending braille labels will need to be updated to include use of UEB. Currently, BANA offers Guidelines and Standards for Tactile Graphics, 2010, which is now under revision to address UEB conventions.

What output features of the braille format are important?

Students usually begin reading embossed braille. This is commonly referred to as "paper braille" (also "hard copy braille") versus "refreshable braille." Refreshable braille is an electronic or digital braille output. As students become proficient in reading textbooks and other materials in paper braille, refreshable braille is frequently included as another effective way to read braille.

Refreshable braille displays represent text which is visually displayed on a computer screen one line at a time. Braille output is created with small plastic pins in the shape of a typical braille cell that move up and down from a flat surface to display the braille characters. Refreshable braille displays can be attached to computers, tablets and smartphones. They

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are also integrated with dedicated note taking devices and portable multi-function computers.

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What characteristics of the braille format influence which outputs are selected?
Both paper and refreshable braille formats have benefits to students. Paper braille is an excellent format for representing graphic materials, math content, and assisting in the student's comprehension of spatial concepts. Refreshable braille provides the student with increased access to information and independence in a variety of environments such as school, home, work, and community because of greater flexibility and portability. Students usually learn to choose a preferred braille format depending on the literacy task and the

environment. For example, a student may prefer a geography textbook in hard copy embossed braille to access maps and related tactile graphics, but prefer reading literature using a refreshable braille format.

Another feature of refreshable braille formats that may influence student choice is the additional output of speech available in electronic formats. Speech access can work in combination with refreshable braille access to increase a student's efficiency. For example, students may increase their reading rate and comprehension through the combined outputs of refreshable braille and speech.

How does the braille format lend itself to use in multiple environments and for multiple tasks?

It is important to consider braille formats in the context of multiple purposes in order to provide access to a variety of tasks. For example, both paper and refreshable braille be used for tasks such as reading books and using additional braille codes. With a portable electronic braille device, a student can easily use braille in multiple environments such as school, home, and community events to engage in additional tasks such as word processing, calculating, web browsing, using email, and checking spelling.

How do people who use braille communicate with others who do not read braille?

Because braille is not widely known or used by the general population, communication between people who use braille and people who use print for literacy tasks needs special consideration when braille is selected as a student's primary learning medium. It will be extremely important for the early braille reader to have access to personnel   in school environment who know how to read and write using the braille code. To facilitate this communication, braille formats which contribute to independent communication and access are important to consider, such as the use of electronic braille tools with refreshable

braille access. Features of electronic braille tools that integrate and interface with other access devices and "mainstream" devices can give print readers access to braille and braille readers access to print. This provides an exciting opportunity for inclusion- when the tools are available in the environment, it can foster collaboration and communication among more students (See UDL Guidelines on page 67 of this publication).

Where to Acquire Accessible Educational Materials[13]

After establishing that a student needs accessible educational materials (AEM) and selecting which formats are needed for what materials, the school district determines how and where to acquire the materials. There are a variety of sources for acquiring accessible educational materials; however, not all students are eligible to receive materials from each of the different sources. Keep in mind that many students may need more than one specialized format and may need materials from more than one source.

There are five basic sources of Accessible Educational Materials which include the following:

1. **NIMAC:** The National Instructional Materials Access Center (NIMAC) is the national repository for National Instructional Materials Accessibility Standard (NIMAS) source files provided by publishers. Only students who are dually qualified under IDEA and meet copyright criteria can receive specialized formats created from NIMAS-conformant files from the NIMAC. IDEA mandated the establishment of the National Instructional Materials Access Center (NIMAC) as a national repository for publisher source filesets of textbooks and related core printed materials that are created

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AEM Navigator, May 2015, Print Version, http://aem.cast.org/about/publications/2015/accessible-educational-materials-navigator-print.html#

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according to the technical specification included in the National Instructional Materials Accessibility Standard, commonly known by the acronym NIMAS *See* 34 CFR §300.172(a)(1). The NIMAC has been established by the American Printing House for the Blind, (APH) in Louisville, Kentucky.

When a publisher creates a NIMAS fileset for a textbook or other print material and deposits the fileset in the NIMAC, that fileset can be converted into student-ready specialized formats, such as braille, large print, audio, or digital text.

It must be remembered that NIMAS filesets have to be converted to student-ready specialized formats and that specialized formats created from filesets housed in the NIMAC can only be used by dually qualified students. A student must be served under IDEA and meet copyright criteria for specialized formats to use materials created from NIMAS source files from the NIMAC.

Additional information on the NIMAC is available at the NIMAC web site (http://www.nimac.us/) and at the AEM Center web site in a FAQ (http://aem.cast.org/policies/nimas-faq.html) about NIMAS and the NIMAC.

2. **AMPs:** Accessible Media Producers, called AMPs, are agencies, organizations, or companies that produce instructional materials in specialized formats such as braille, large print, audio, or digital text. Most materials produced by AMPs are available to students or others who meet copyright criteria for specialized formats.
   - **Bookshare, https://www.bookshare.org/cms/** and the
   - **American Printing House for the Blind (APH)** https://www.aph.org/about/

receive considerable federal funding that enables them to provide specialized formats free of charge or at a very low cost to qualified students. A third AMP,

- **Learning Ally** (formerly Recording for the Blind and Dyslexic https://learningally.org also provides materials across the country for a fee. Please refer to the AEM Guide to Accessible Media Producers: http://aem.cast.org/navigating/aem-guide-amps.html
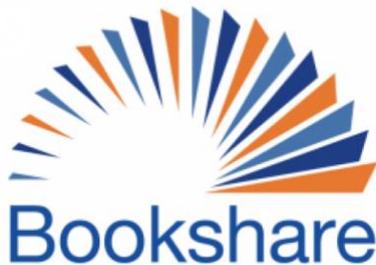
The American Printing House for the Blind (APH) maintains and promotes the *Louis Database of Accessible* contains information on accessible print materials produced by about 160 organizations throughout the United States. These materials include books in

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braille, large print, audio, and electronic file format. *Louis* also lists products developed by APH. This national data base of AEM includes 250,000 files in accessible formats.

APH Search Page

As seen in the picture above, the search can be as narrow as search by Braille, Large Print, Sound, or E-Files, or you can browse by subjects APH includes over a quarter of a million titles in accessible formats. While students who meet Visual Impairment criteria in Wisconsin benefit from the Federal Quata funds in the purchase of these AEM, school districts may also purchase any Accessible Educational Materials for any student in need of AEM.

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3. **Commercial Sources:** Some instructional materials can be purchased in accessible formats from publishers and other sources (e.g., Audible.com.). Materials acquired via purchase from a commercial source can be used by any student. This source should be used when it is available.

Commercial sources include publishers and other companies or organizations that create and provide some AEM formats for sale. Some publishers provide accessible CDs or online versions along with or as an alternative to printed textbooks. When purchasing these materials it is important to ensure that the information is exactly the same as in printed versions of the materials and to determine the features that make them accessible to some students (e.g., contains digital text that can be read aloud).

Not all CDs or digital materials are accessible. As general publishing becomes increasingly digital, the expectation is that educational publishers will embrace a market model and design accessibility features into all products. Those materials can be sold to SEA (State Educational Agency) and LEA (Local Educational Agency) for use by any student. Through the market model, SEAs and LEAs can acquire and provide accessible materials to any student who may need them or prefer them without concern for qualification issues.

There are also other commercial sources that provide materials in formats that may meet the accessibility requirements for some students (e.g., audio from Audible.com). These sources do not typically provide textbooks but may be an excellent source of supplementary literature.

o **Book Publishers:**

Some publishers of instructional materials are now making their materials available in specialized formats. There is no central clearinghouse listing who

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these publishers are. Schools are encouraged to ask sales staff from these companies for lists of AEM that they can purchase.

If a publisher has a specialized format of a copyrighted material, such as a textbook or contemporary novel, available for sale, it can be purchased and used by any student. That is, it doesn't have to be reserved for the sole use of a student with a print disability.

4. **Free Sources:** Some accessible materials are available free-of-charge from various sources, frequently via the Internet. These materials are typically copyright-free or open source. Materials acquired from free sources can be used by any student. With the exception of open source materials, commercially prepared textbooks are not available in this category.

There are many sources that provide AEM free-of-charge. Materials in the public domain due to copyright expiration can often be found in numerous locations on the Internet, typically in a digital text format. Although printed textbooks are rarely available, there are many web-based sources for originally print-based materials that may be used in literature courses or other classes.

There is also an increasing availability of instructional materials that are "open source"— materials that can be acquired, customized, and used with any student free-of-charge or for a very small fee, depending upon the source. If open source materials are being used by other students, the team should explore whether or not those materials are accessible.

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The Maine–AEM website shares the following free online-collections that are available for use by all students (see link below:)

https://maine-aim.org/selectionacquisition-of-aim/acquiring-digitaltext-aim/

- Alex Catalog of Electronic Texts
- Authorama
- Bartleby.com
- bibliomania
- CK-12 FlexBooks
- Curriki
- Digital Book Index
- Flat World Knowledge
- Free eBooks: The Ultimate Guide
- MARVEL – Maine's Virtual Library of Databases
- MIT OpenCourseWare
- News for You

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- [OER Commons](#)

- [The Online Books Page](#)

- [Open Library](#)

- [Project Gutenberg](#)

- [Read Print](#)

- [UDL Editions by CAST](#)

- [Wikibook.s](#)

Commercially Available eBooks
- [Amazon Kindle](#)

- [Barnes & Noble NOOK](#)

- [iBooks for iPad](#)

Other Options – Scanning:

Schools may choose, or may need, to produce their own Digital Text materials. Standard print material can be converted to digital text by scanning with a flatbed scanner using Optical Character Recognition (OCR) software. Under federal law, copyrighted materials can be scanned and used by students with qualifying print disabilities. Materials in the Public Domain, licensed under Creative Commons, or teacher-created can be scanned and used by all students. We have provided: [a link to more information about OCR software](#) ⬀ for your use."

While scanning materials may appear to be a good and less expensive option, the quality of these instructional materials needs to be at least as good as the original. Producing high-quality AEM can take a considerable amount of time and require special resources. For high quality AEM, Digital Text should be appropriately "tagged" to identify the parts of the document including titles, headings, and alternative descriptions for images.

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5. **Locally Created":** Some instructional materials are not available in accessible formats from any other source and others are not published (e.g., teacher-developed materials). Accessible versions of these materials must be locally created through the use of scanning or other means. When accessible versions of copyrighted materials are created locally, compliance with copyright law is required. These materials are created on a student-by-student basis for a specific student only. Publisher permission must be requested. "Locally created" production refers to the means used by special education teachers and assistive technology personnel to make printed materials accessible by scanning, recording, or otherwise transforming them into formats that can be used by students with disabilities. Although this was the primary means of providing AEM for many years and is still the only way to provide some materials (e.g., non-published, teacher-created materials) this should be the means of last resort.

Local creation of materials on a student-by-student basis is extremely time intensive and does little to encourage the systemic change needed to effectively and efficiently provide materials to all students who require specially formatted instructional materials to achieve positive educational outcomes. There is every expectation that as the market model strengthens and more accessible materials are available for purchase there will be markedly less need to use this option for textbooks and other published related core materials.

Teacher-made materials include worksheets, tests, and other materials created by a teacher for use in a classroom that are not a part of published print materials purchased with textbooks and are not available in specialized formats from other sources. If a student requires specialized formats of published printed instructional materials, it logically follows that materials produced by a teacher will also need to be made accessible via a "locally created" process. The materials might be made accessible either in the development of the

product (e.g., by using the Save-as-DAISY option in MS Word) or through another conversion option (e.g., creating a digital version by scanning the print version, creating an audio version by recording).

Teacher-made materials and other materials that are not copyrighted can be freely shared, and a local repository for these materials can be created to reduce duplication of effort.

It is important to keep in mind that local creation of AEM does not relieve anyone from observing copyright law as it relates to instructional materials. If copyrighted materials are being used as a source, the restrictions are the same as those for AMPs and other sources. In other words, if an accessible format of a copyrighted material is created for one child who needs it, that material cannot be shared with another child who may simply prefer it (or even need it) if that child does not meet copyright criteria—except possibly under the Fair Use exception to copyright statute. To learn more about the Fair Use exception, please refer to the U.S. Copyright Office's information on Fair Use:

https://www.copyright.gov/fair-use/   The safest approach is to obtain a publisher's permission before creating materials locally.

How to Acquire Accessible Educational Materials (AEM)

1. **Acquiring AEM from APH.**

   As noted in the previous section, the APH website present a clear gateway for teachers to search for acquiring AEM: http://louis.aph.org/catalog/CategoryInfo.aspx?cid=152 .

   - If the AEM is produced by APH:
     - For Students with Visual Impairment who are reported in the Federal Quata Funds, the teacher submits Book Request via Wisconsin Accessible Media Productions (WAMP)
     - If student is not eligible for the Federal Quota Funds, and is a SwD, the school district may purchase the needed AEM directly from APH.

- o If the needed AEM is produced by Accessible Media Producers (AMPs) other than APH, the school district may obtain the AEM directly from that AMP. The list includes Bookshare, Learning Ally, or Commercial Sources (NIMAC files are available through APH or Bookshare.

1. Acquiring AEM from Bookshare: https://www.bookshare.org/cms/

   Also, check the links below:

   - o How Do I Find Books in Bookshare?

   - o Who Qualifies for Bookshare?

   - o How Do I Choose a Membership Type?

   - o Is There a Membership Cost?

   - o How Do I Read Books in Bookshare? Are There Programs or Apps?

   - o Individual and Student Members Can Read Books Using Web Reader!

   - o What if I am Using a Different Device? You Can Use the Bookshare Reading Tool Wizard!

   - o What If I Need Bookshare Support?

   - o Are There Bookshare Frequently Asked Questions?

   - o Help, I Need Webinar Training!

   - o Use the Bookshare YouTube Channel to Learn More!

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2. Acquiring AEM from Learning Ally: https://learningally.org/

Please check the links below"

- o What is a Learning Ally Audiobook? Listen to an Audiobook Sample!

- o What About Learning Ally Membership?

- o Free Playback Software with Membership. Play Audiobooks on Your Computer, Tablet, or Mobile Phone.

- o Teachers with Apps Names Learning Ally LINK Top Resource for Students with Learning Disabilities!

- o Listen to Educators Share Student Success Stories!

- o Need Student Success Stories and Learning Ally Case Studies with Data?

- o What Could Membership Mean to You? Videos of Student Success Stories!

- o Are there Educator Resources for Me?

- o I Need a Webinar for Support!

- o Learning Ally YouTube Channel!

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3. Acquiring AEM from NIMAC (NIMAC does not have student-ready files and therefore not an AMP. AMPs can receive NIMAS files from the NIMAC to convert to student-ready files for student who qualify under IDEA).

Please check the links below:

- o Check Out the Accessible Instructional Materials Process

- o The National Instructional Material Standard (NIMAS)

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4. See several tools available to Educators and Schools:

- Tumblebooks for Leisure Audio and Digital Text

- Read and Write for Google Chrome

- Read and Write for Schools and Students

- OverDrive for Audio and Digital Text

- Kurzweil for Accessible Text

- Voice Dream Reader

- Voice Dream Writer

TumbleBookLibrary	TumbleBookCloud	RomanceBookCloud	AudioBookCloud
TumbleBookLibrary is a curated database of children's e-books, available by subscription to Elementary Schools and Public Libraries around the world. TumbleBookLibrary Premium has over **1100** titles for grades K-6, and includes our unique animated, talking picture books, read-along chapter books, national geographic videos, non-fiction books, playlists, as well as books in Spanish and French. Plus, the collection features Graphic Novels - a student favorite! As well as Math Stories! Subscriptions are affordable and EASY to use, and include tools to simplify your kids' access from home as well as from your building. There are no check-out times or wait lists: the books are always available, to everyone in your institution! It's a great resource for tech-savvy kids, and teaches them the joy of reading in a format they'll love.	TumbleBookCloud is a curated database of e-books and other digital content for Middle Schools and High Schools, as well as Public Libraries. The growing collection features over **1000** titles, including student-favorite Graphic Novels, enhanced e-books with full audio narration and highlighted text, classic literature, national geographic videos, and more! The site supports a wide range of readers' interests and levels. We've partnered with Orca Books and Saddleback books to bring you hundreds of High-Interest/Low-Level content. In addition, our new AP English section makes hundreds of curriculum books available to readers at the click of a button! Subscriptions are affordable and EASY to use, and include tools to simplify your students' access from home as well as from your building. There are no check-out times or wait lists: the books are always available, to everyone in your institution!	**Love is in the air. Actually, it is in the cloud.** A subscription to RomanceBookCloud provides for unlimited and unrestricted access to a curated collection of romance ebooks Whether it be contemporary, historical, time travel, paranormal or inspirational, you will love to read about love at RomanceBookCloud. With a large core collection from favorite award winning and best selling authors plus 25 new titles each month, you will never run out of books to read! **Read to your heart's content!**	AudioBookCloud is a curated database of streaming audio books and is available by subscription to Public Libraries around the world. The growing collection features over 1400 titles, including dozens of genres and interest levels. The collection includes popular literature, classics, childreniۘs and teen books, mystery, sci-fi, history, biography, and more! The audio books are always available to subscribing libraries and their patrons. There are no special programs to install, or files to download. The siteiۘs also completely mobile compatible, and the audio books can be streamed directly to whichever device you wish to use. Subscriptions are affordable and EASY to use, and include tools to simplify your patronsiۘ access from home as well as from your building. There are no check-out times or wait lists: the books are always available, to everyone in your library!

5. Acquiring AEM from the Wisconsin Accessible Materials Productions (WAMP). WAMP is funded by the Department of Public Instruction and is located at the WCBVI to assist local districts in obtaining accessible educational materials (AEM) in specialized formats. Please check these links:

  - http://www.wcbvi.k12.wi.us/outreach website for detailed information regarding the processes for requesting specially formatted textbooks and related educational materials

  - http://www.wcbvi.k12.wi.us/outreach Consultation, assessment and evaluation are also available at no cost to local school districts through WCBVI Outreach for students who are blind or visually impaired.

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Information for Parents and Families

This section includes two sources for parents and families:

1. An excellent source for parents and families on AEM can be found at the National Center on Accessible Educational Materials. See below screenshot of the website. Please check the link below:

    http://aem.cast.org/about/quick-start-families.html#.WzzwqS3MzOQ

2. **Another excellent article (see text below) for parents and families can be found on the LD Online website:[14]**

Making the Written Word Easier for Readers with Print Disabilities

As a kindergarten and first grade student, Stacy loved going to school. She enjoyed the classroom activities that helped her learn and looked forward to socializing with her friends. By the time Stacy reached the second grade, she did not like going to school as much. Most of her classmates were reading short stories, but she struggled to read complete sentences. Stacy and her family eventually discovered that she had a reading disability. The learning specialist in Stacy's school identified a number of strategies to help Stacy with her reading. One of them involved using special software which highlighted and read words aloud along with Stacy.

Many parents are in need of solutions to help their children with reading difficulties. Using technology-aided instruction is one way to address this serious issue. Policy makers created the National Instructional Materials Accessibility Standard (NIMAS) when writing special education legislation such as the Individuals with Disabilities Education Act of 2004, known as IDEA. This was done to make certain that qualifying student with disabilities receive textbooks and other important materials in an accessible format at the same time as their fellow students.

Due to the great need for information about this topic, LD Online and the National Center for Technology Innovation have devoted an Info Brief for Frequently Asked Questions about text formats, with an emphasis on the National Instructional Materials Accessibility Standard (NIMAS). Much of this brief is anchored in two documents produced LD OnLine by the NIMAS Technical Assistance Center: Accessible Textbooks: A Guide for Parents of Children with Learning

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[14] http://www.ldonline.org/article/23003/

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Disabilities and <u>An Educator's Guide to Making Textbooks Accessible and Usable for Students with Learning Disabilities</u>.

The five (5) Questions and Answers (Q&A) below explain to parents and families the many aspects of Accessible Educational Materials and their potential for meeting the needs of students.

1) What is e-text?

Many people read printed text with little or no difficulty. Standard forms of text format might entail black font displayed on a white background, like that found in books and newspapers. However, alternative text formats can be more flexible, depending on the learners' needs. E-text, which refers to digitized text, makes alternatives possible. For example, e-text might be spoken out loud, displayed in special color combinations, presented in different styles, enlarged, or a displayed in a combination of these formats.

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2) Has government provided guidance for facilitating production and distribution of e-text?

Yes! The authors of IDEA 2004 created the National Instructional Materials Accessibility Standard (NIMAS) to make certain that qualifying student with disabilities receive textbooks and other important materials in an accessible format at the same time as their fellow students. NIMAS involves XML, a mark-up language that codes text and other information for a variety of uses. Under IDEA 2004, schools and districts that receive federal funds must ask publishers to deliver textbook files that meet NIMAS. The XML mark-up language provides a common coding language to create e-text. This facilitates transforming the e-text into alternative formats such as Braille, digital talking books, and large print in a more efficient manner than traditional approaches.

3) What is a practical example of how NIMAS can help?

Take, for example, the story of Stacy, a second grade student who has a reading disability. Stacy needs the words of a book read aloud to her. Someone is not always available to read to her, so technology is used to serve this purpose. This requires the book to be scanned into a file and for the file to be uploaded on a computer or other piece of hardware. Traditional practices would require the Stacy's paraprofessional to scan information into a software application, read the entire text for errors and revise the text before it is ready to be read aloud by a screen reader. This process can take a long time to complete. The time delay may cause Stacy to receive materials late and to fall behind in class. Acquiring a NIMAS e-text file of the book, or acquiring e-text from other sources, would eliminate much of the preparation, thus making instructional materials more easily accessible to Stacy and other students with special needs (Parents cannot receive files directly, but they can contact their school district if they believe NIMAS materials are needed).

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4) My child would benefit from alternative text formats. How can I inquire about securing such curricular materials for her?

Then National Instructional Materials Access Center (NIMAC) at the American Printing House for the Blind serves as a central repository for publisher files. It provides a nationwide system to supply accessible versions of core instructional materials such as textbooks and related products to students who qualify with a print disability. A designated state representative or coordinator is responsible for accessing the NIMAC. Although parents cannot receive files directly, sometimes, parents have found that they must take the initiative to inform their school system of this type of resource.

5) NIMAC has not been presented as an option by my child's school to help with her print disability. What is the best way to advocate for this resource?

Although NIMAC files can be accessed only by users authorized through the state, parents may access the NIMAC database to determine if NIMAS files for a particular textbook are available. The NIMAC database can be accessed at http://nimac.privatereserve.com/Inventory-Search.asp. To start the process of acquiring NIMAC files, consider the following steps:

- Contact your local or regional special education or assistive technology specialist to request accessible, student-ready versions of print instructional materials created from NIMAS file-sets.
- Contact your state's primary contact for NIMAS/NIMAC to determine which accessible media producers are eligible to receive NIMAS file-sets from the NIMAC and to transform them into accessible, student-ready versions.

The Link between and Accessible Educational Materials (AEM) and Universal Design for Learning (UDL)

As IEP Teams identify students with 'Print Disabilities and remove learning barriers with the assistance of Digital Text, Audio, Large Print or Braille, so does UDL.

UDL recognizes that learning barriers in the classroom can be removed by providing students with multiple ways to access information, engage with the information and to express what they learned.

Allison Posey, CAST presenter and national leader in UDL states: "When selecting a tool or resource, take time to reflect on the intended learning goals and objectives for the task. Reflect on the barriers that typically block students from progressing towards those goals and objectives. Then, you can be very purposeful about which tools and strategies are made available for students to use in order to help reduce those barriers. There is not necessarily one tool that will work for all students at all times. For example, a specific tool such as a screen-reader may be essential for one student to perceive the print on a document. That same tool may help support another student to decode a new text. What is essential for one student may be "good for all."

Allison Posey continues "The Universal Design for Learning guidelines http://udlguidelines.cast.org/ may be a helpful framework for IEP teams to use as you reflect on the instructional strategies, tools and technologies to offer. UDL encourages educators to design flexible options into the learning experience that support the "why" of learning (the UDL Engagement guidelines), the "what" of learning (the UDL Representation guidelines), and the "-how" of learning (the UDL Action and Expression guidelines). This framework helps educators incorporate intentional and flexible tools and resources in the design of the learning environment proactively".

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Please see below the three UDL Guidelines, reflecting the three brain networks involved in learning:

- Provide multiple means of engagement (the "why" of learning)
- Provide multiple means of representation (the "what" of learning)
- Provide multiple means of action and expression (the "how" of learning)

The Universal Design for Learning Guidelines

CAST | Until learning has no limits

Provide multiple means of **Engagement**	Provide multiple means of **Representation**	Provide multiple means of **Action & Expression**
Affective Networks The "WHY" of Learning	Recognition Networks The "WHAT" of Learning	Strategic Networks The "HOW" of Learning

Access

Provide options for **Recruiting Interest** (7)	Provide options for **Perception** (1)	Provide options for **Physical Action** (4)
• Optimize individual choice and autonomy (7.1) • Optimize relevance, value, and authenticity (7.2) • Minimize threats and distractions (7.3)	• Offer ways of customizing the display of information (1.1) • Offer alternatives for auditory information (1.2) • Offer alternatives for visual information (1.3)	• Vary the methods for response and navigation (4.1) • Optimize access to tools and assistive technologies (4.2)

Build

Provide options for **Sustaining Effort & Persistence** (8)	Provide options for **Language & Symbols** (2)	Provide options for **Expression & Communication** (5)
• Heighten salience of goals and objectives (8.1) • Vary demands and resources to optimize challenge (8.2) • Foster collaboration and community (8.3) • Increase mastery-oriented feedback (8.4)	• Clarify vocabulary and symbols (2.1) • Clarify syntax and structure (2.2) • Support decoding of text, mathematical notation, and symbols (2.3) • Promote understanding across languages (2.4) • Illustrate through multiple media (2.5)	• Use multiple media for communication (5.1) • Use multiple tools for construction and composition (5.2) • Build fluencies with graduated levels of support for practice and performance (5.3)

Internalize

Provide options for **Self Regulation** (9)	Provide options for **Comprehension** (3)	Provide options for **Executive Functions** (6)
• Promote expectations and beliefs that optimize motivation (9.1) • Facilitate personal coping skills and strategies (9.2) • Develop self-assessment and reflection (9.3)	• Activate or supply background knowledge (3.1) • Highlight patterns, critical features, big ideas, and relationships (3.2) • Guide information processing and visualization (3.3) • Maximize transfer and generalization (3.4)	• Guide appropriate goal-setting (6.1) • Support planning and strategy development (6.2) • Facilitate managing information and resources (6.3) • Enhance capacity for monitoring progress (6.4)

Goal — **Expert learners** who are...

Purposeful & Motivated	Resourceful & Knowledgeable	Strategic & Goal-Directed

udlguidelines.cast.org | © CAST, Inc. 2018 | Suggested Citation: CAST (2018). Universal design for learning guidelines version 2.2 [graphic organizer]. Wakefield, MA: Author.

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General Resources

National Center on Accessible Educational Materials. (2015). AEM Navigator. Retrieved from http://aem.cast.org/navigating/aem-navigator.html

The AEM Navigator is an interactive tool that facilitates the process of decision-making around accessible educational materials for an individual student. The four major decision points in the process include 1) determination of need, 2) selection of format(s), 3) acquisition of format(s), and 4) selection of supports for use. The AEM Navigator also includes a robust set of guiding questions and useful references and resources specifically related to each decision point. Different scaffolds of support are built in so that teams can access information at the level needed to assist them in making informed, accurate decisions.

Zabala, J. & Carl, D. (2015). Accessible educational materials in 2015: The basics for families and educators.

> This webinar provides current basic information about the provision of accessible materials. Topics in this introductory webinar include legal issues, the changing language of AEM, a decision-making process, and how to locate and use supporting resources.

King-Sears, M. & Bowman-Kruhm, M. (2010). Attending to specialized reading instruction for adolescents with mild disabilities. Teaching Exceptional Children, 42(4), 30-40.

> This article describes aspects of specialized reading instruction for adolescents with reading difficulties. It includes a discussion of electronic text and audio files as well as accommodations and modifications.

Bowser, G. & Reed, P. (2012). Extended assessment. Education tech points: A framework for assistive technology planning. Oregon: Winchester. Coalition for Assistive Technology in Oregon. Retrieved May 13, 2015, from http://www.educationtechpoints.org/manuals-materials

> The Education Tech Point Manual provides a framework that educational teams and school districts can use to plan for high quality, comprehensive assistive technology services. The Extended Assessment chapter provides information about how teams can implement trial periods with technology in order to collect data about whether a technology application will be of benefit to a student with a disability

Bowser, G. & Reed, P. (2001). Hey can I try that?
Retrieved May 13, 2015, from http://www.educationtechpoints.org/manuals-materials

This document provides questions to guide student AT users in decision-making processes. It is appropriate for middle school, high school, and transition-aged students.

Center for Applied Special Technology and LD Online. (2007 . Accessible textbooks: A guide for parents of children with learning disabilities. Retrieved from http://www.ldonline.org/article/Accessible_Textbooks%3A_A_Guide_for_Parents_of_Children_with_Learning_Disabilities
National policy-makers have realized that students with disabilities need access to the same materials as their fellow students. During the re-authorization of IDEA, the National Instructional Materials Accessibility Standard (NIMAS) was created. A central repository for publisher files, the National Instructional Materials Access Center (NIMAC), was also created to provide a nationwide system to supply accessible versions of core instructional materials—textbooks and related products—to qualifying students with print disabilities. This article helps parents know how to take the lead in working with their school system to provide accessible instructional materials.

Zabala, J. (2005). Ready, SETT, go! Getting started with the SETT framework. Closing the Gap, 23(6).

This article provides an overview of the SETT Framework. The SETT Framework values input from all perspectives and considers a student's unique needs and abilities, the environment(s) in which a student operates, the tasks required for active participation in the activities of the environment, and, finally, the tools needed for the student to address the tasks presented by the environments.

Zabala, J., Bowser, G., & Korsten, J. (2005). SETT and Re-SETT: Concepts for AT implementation. Closing the Gap, 23(5).

Once a team has determined that assistive technology devices and services are necessary, revisiting the SETT Framework helps teams plan for effective use of AT by a student in customary environments for the accomplishment of everyday tasks. In order to expand the understanding of how the SETT Framework supports

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AT use, this article on implementation offers strategies to help teams see the importance of keeping the information in the SETT Framework up-to-date, accurate, and inclusive.

National Center on Accessible Instructional Materials. (2010). AIM explorer [Software]. Retrieved from http://aem.cast.org/navigating/aim-explorer.html
The AIM Explorer is a free software simulation tool that combines grade-leveled digital text with access features common to most text readers and other supported reading software. Magnification, custom text and background colors, text-to-speech (synthetic and human), text highlighting, and layout options are presented in a logical sequence to help struggling readers, educators, and families decide which of these supports might enable the student to access and understand text.

DAISY Consortium. (2015). Retrieved from http://www.daisy.org/
The DAISY Consortium develops and promotes DAISY (Digital Accessible Information SYstem) and has been selected by the National Information Standards Organization (NISO) as the official maintenance agency for the DAISY/NISO Standard, specifications for the Digital Talking Book, known as DAISY 3. The DAISY digital format assists people who have challenges using regular printed media. DAISY digital talking books (DTBs) offer the benefits of regular audio books but also include added features such as navigation.

Analysis of the term "Reading Disability Resulting from Organic Disfunction" and its relationship to the IDEA Category of "Specific Learning Disability" by Joanne Karger, 2012)

Building on a Firm Foundation: Supporting Students with More Intensive Support Needs in UDL Environments. Article by Joy Smiley Zabala, Ed.D
http://aem.cast.org/about/publications/2016/supporting-students-intensive-support-udl.html#.Wzwrxi_MzOQ

Hashey, A.I., & Stahl, S. (2014). Making online learning accessible for students with disabilities. TEACHING Exceptional Children, 46(5), 70-78. DOI: 10.1177/0040059914528329
http://aem.cast.org/about/publications/2014/accessible-online-learning-disabilities-stahl.html#.Wzzu7C3MzOQ

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