![Massachusetts Department of Elementary & Secondary Education logo]

Access to Learning

Assistive Technology and Accessible Instructional Materials

November 2012

This document was prepared by the
Massachusetts Department of Elementary and Secondary Education
Mitchell D. Chester, Ed.D.
Commissioner

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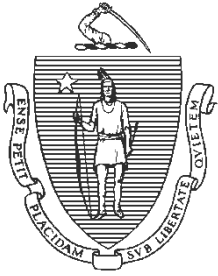Inquiries regarding the Department's compliance with Title IX and other civil rights laws may be directed to the Human Resources Director, 75 Pleasant St., Malden, MA 02148 781-338-6105.

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Mitchell D. Chester, Ed.D.
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November 2012

Dear Educators and Other Interested Parties:

I am pleased to share with you this guide, *Access to Learning: Assistive Technology and Accessible Instructional Materials,* which offers guidance to Massachusetts school districts in providing these supports to students with disabilities.

Assistive technologies and accessible instructional materials are making a big difference in the lives of many students with disabilities in Massachusetts--expanding their learning opportunities, personalizing their instruction, and allowing them to participate in school activities alongside their peers. This guide provides information on how you can implement these supports, focusing on best practices, student success stories, statewide projects, and local service providers. Also included in the guide is a list of commonly asked questions, along with a collection of online resources with additional information.

I hope this guide will help us realize our goal of preparing *all* students to succeed in the world that awaits them after high school. I look forward to working with you to realize that goal.

Sincerely,

Mitchell D. Chester, Ed. D.
Commissioner of Elementary and Secondary Education

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Introduction

The Individuals with Disabilities Education Act (IDEA), a federal law on special education that was reauthorized in 2004, requires schools to consider a student's possible need for assistive technology devices and services whenever an Individualized Education Program (IEP) is developed.[1] In addition, the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act require schools to provide assistive technology for students with disabilities, if needed to assure equal access to the school's programs and services. Both of these laws also require that schools provide instructional materials in accessible formats to students who need them.

Today's technologies have the ability to dramatically change the lives of students with disabilities, enabling them to access the curriculum, participate in learning activities alongside their peers, personalize their learning, and achieve their full potential. An understanding of assistive technologies and accessibility will help school personnel make informed decisions when they evaluate students' needs. Better still, this knowledge will help schools develop educational environments and programs that can meet the needs of *all* students, regardless of whether they have disabilities. It is with this goal in mind that this publication was developed.

Providing Assistive Technology

It is important to keep in mind that providing assistive technology is not simply a matter of purchasing devices. To help ensure that students will benefit from using a device, schools need to address a number of issues.

Considering the Need for Assistive Technology

The principal reason for providing assistive technology in school is to enable students to meet the instructional goals set forth for them. School personnel should look at tasks that each student needs to accomplish, the difficulties the student is having, and the ways that various devices might help the student better accomplish those tasks.

There are many factors that need to be examined when assistive technology devices and services are being considered for a student—including educational goals, personal preferences, social needs, environmental realities, and practical concerns. A careful evaluation of the options will help schools avoid spending money on devices and services that do not meet a student's needs. See the Student Spotlight on page 17 to better understand the importance of performing a thorough evaluation.

Also critical are the various services that will support the student's use of assistive technology. These services can include customizing a device, maintaining or repairing the device, and providing training and technical support. In addition, training may be needed not only for the student but for any family members and teachers who may assist the student. It is important that these services be considered, planned, and documented at the time of the evaluation. Finally,

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[1] For more information about the laws related to assistive technology, see the Resources section of this guide.

evaluation should be an ongoing process. Assistive technology devices and strategies should be constantly reviewed to ensure that they are meeting the changing needs of the student.

When considering students' need for assistive technology, many schools use the **SETT Framework** (http://www.joyzabala.com/Documents.html) a set of forms for collaborative decision making developed by assistive technology expert Joy Zabala. SETT is an acronym for Student, Environments, Tasks, and Tools—all of which need to be fully explored when assistive technology tools are considered or selected. In addition, the **National Dissemination Center for Children with Disabilities** offers a checklist (http://nichcy.org/schoolage/iep/meetings/special-factors/considering-at) that can guide schools in considering assistive technology.

Selecting Devices

When exploring assistive technology devices for a student, it is important to consider the full range of devices that are available, beginning with low-tech devices and considering high tech-devices only after the lower-tech options have been tried. Although people sometimes assume that the most expensive, high-tech device is the best solution for a student, this is not necessarily true. In fact, a low-tech device is sometimes more effective, since it is often easier to learn, use, and maintain.

Student involvement is a critical part of the assistive technology evaluation. If at all possible, the student should have an opportunity to try out a device before a decision is made. A trial period should include an observation by one or more professionals to assess whether the student is physically and cognitively able to use the technology effectively. This observation should also include an assessment of the time and staff support needed for the student to learn to use the device independently. School personnel may be able to make arrangements for a loan or short-term rental of a device for evaluation purposes. This trial process will be easier for schools that have already invested in some of the commonly used devices for students to try.

In addition to the student's technical comfort level, the evaluation Team should explore the student's feelings about a particular device. There can be no educational benefit if a student is unwilling to use the device. If, for example, a student feels embarrassed about using the device in front of his or her peers, it is probably not a good choice.

It is also helpful to consider where the student will be using the technology. Ideally, the evaluation takes place at a student's school, as well as in the home, if the device(s) will be used there. Examining the environment should include a consideration of the physical arrangements, any special environmental challenges, and the technical infrastructure. The evaluation Team should identify how the technology will enable the student to be included in classroom activities to the greatest extent possible. An example of an ineffective environmental arrangement is a situation requiring the student to sit in a corner of the room throughout the day in order to be near an electrical outlet for a computer.

Schools across the country have turned to the rich collection of resources created by the **Wisconsin Assistive Technology Initiative.** WATI's resources include suggested tools and strategies for students with various types of disabilities, as well as for various curriculum areas. Also useful are WATI's checklists, which assist educators in gathering information about the student, the student's environment, and tasks the student needs to complete. (http://www.wati.org/?pageLoad=content/supports/free/index.php).

Providing Support for the Use of Assistive Technology

In order for students to get the maximum benefit from assistive technologies, there must be broad administrative support for their use in the schools. Districts need to include assistive technologies when planning their infrastructure and budgeting for technology purchases. School districts must also have clear guidelines and procedures for assessing and documenting the need for assistive technology. In addition, instructional staff members need to understand the importance of working together to ensure that the use of assistive technology is integrated into the daily activities of the students who require it.

One of the most important ways districts can support the use of assistive technology is to provide professional development for instructional staff, administrators, and others involved with purchasing and using these devices and services. It is clear why teachers need training on devices that their students will be using. Perhaps less obvious is that school administrators and other personnel need to be aware of the range of devices that are available. Equipped with that knowledge, school personnel are better able to consider and recommend devices when they are confronted with students who need help.

Today there are thousands of assistive technology devices on the market, plus many more items that can function as assistive technology devices. Moreover, new solutions are being developed every day. Clearly, it is difficult for individual teachers to become knowledgeable about all of these devices. Thus, it is helpful to provide opportunities for staff to share their knowledge and to network with others who are using assistive technologies.

For more information, schools can turn to **Quality Indicators for Assistive Technology Services,** or QIAT (http://natri.uky.edu/assoc_projects/qiat/), which offers guidelines for providing quality assistive technology services. The QIAT Consortium is a nationwide grassroots group supported by a leadership team of nationally recognized experts in assistive technology. It maintains an active listserv where educators can participate in online discussions.

Another helpful resource for learning about assistive technology is **The Family Center on Technology and Disability** (http://www.fctd.info/). Its website offers success stories, information about disability organizations, reviews of technology resources, monthly newsletters, and more. Its large collection of annotated resources can be browsed or searched by topic, disability, and material type.

Moving Towards Universal Design for Learning

Universal Design for Learning (UDL) is an approach to developing curricula that will meet the needs of the widest possible range of students. Using this approach, curricula are designed with flexible options that can be adjusted for individual students' needs. Technology can support UDL by offering multiple options for students to access information, demonstrate what they know, and get excited about learning.

By planning in advance for students' varying abilities, needs, and interests, schools may be able to reduce the need for special services, since accommodations for various learning challenges will be built into the curriculum. In addition, the use of universally designed curriculum tools and materials can reduce the time teachers need to spend in modifying the curriculum to meet students' needs. Technology can help to streamline the process of creating a universally designed

curriculum. For example, when text is available in a digital format, a number of adaptations are possible:

- A student with a learning disability can listen to the text using a software program that converts the text to speech (See the Student Spotlight on page 18.)

- A student with low vision can enlarge the text or change its color on the computer to make it easier to read.

- A student who is blind can use a software program that translates the text into braille. (See the Student Spotlight on page 16.) If desired, the document can be printed using a braille embosser.

As the examples above illustrate, universally designed curricula do not necessarily eliminate the need for assistive technology. Rather, they work together to meet students' needs.

The **National Center on Universal Design for Learning** (http://www.udlcenter.org/) is an excellent online resource for learning about universal design. Founded by CAST, this national center provides research evidence, implementation guidelines, examples, news, resources, videos, self-paced modules, and more. Its UDL Guidelines section offers a rich collection of examples and resources (http://www.udlcenter.org/implementation/examples) that teachers can use with students.

Assistive Technology Tools

Assistive technologies provide creative solutions that enable students with disabilities to be more independent and productive. These tools can also help students with disabilities participate more fully in both the academic and social activities in a school.

Assistive technology devices can be grouped into three categories: low-tech, mid-tech and high-tech. Low-tech devices are typically easy to use, inexpensive to purchase, widely available, and involve little or no training. Mid-tech devices are somewhat more complex, often requiring a battery. High-tech devices tend to be more costly and frequently require some training.

Low-Tech Devices

When exploring assistive technology solutions for a student, the evaluation Team should first consider whether low-tech solutions can meet the student's needs. Not only is this approach cost effective; it is also beneficial to the student. Since low-tech devices are typically portable and easy to use, their use may be virtually transparent. For example, a rubber pencil grip can enable a student with poor motor control to grasp a pencil more securely and produce more legible work. Using the pencil grip is far less likely to embarrass the student than using an awkward piece of equipment, especially if all of the other students are writing with pencils.

Here is a sampling of low-tech devices that can be used to help students with disabilities participate in the general curriculum:

- Sticky notes and removable highlighter tape can be used by students or teachers to mark important words or sections of text.

- Small whiteboards or chalkboards can be helpful for students who find it challenging to answer questions orally in class.

- Communication books with pictures representing frequently used messages can help a nonverbal student to communicate.

- Timers can be used to show how much time an activity will take, helping students pace themselves through activities.

- Line magnifiers, which enlarge a line of text, can be helpful to students with vision impairments, as well as students with learning disabilities who have difficulty focusing on one line of text at a time.

- Seat cushions can help students with physical disabilities maintain the posture needed to use their arms or hands effectively. For students who have difficulty with attention, some seat cushions can also have a calming effect.

Mid-Tech Devices

Mid-tech devices offer many of the advantages of low-tech devices. They tend to be relatively inexpensive and usually do not require extensive training. In addition, they are often lightweight and portable, allowing them to be used anywhere.

Here are some examples of mid-tech devices that can help students with disabilities:

- CD players with audiobooks allow struggling readers to listen to text as they look at the words in printed books.

- Digital audio recorders provide a way for students to practice reading aloud. They can also be used by teachers or students to record reminder messages.

- Amplification systems can be useful for students with hearing impairments, as well as for students who have difficulty focusing on what the teacher is saying.

- Specialized calculators, such as those with large displays or speech output, can be helpful to students with vision impairments.

- Hand-held talking dictionaries can be useful to students who have difficulty with reading or spelling.

- Talking switches can help nonverbal students participate more fully in classroom and social activities. The teacher can record short messages, which the student can play back as needed.

High-Tech Devices

When low- and mid-tech solutions are not useful, the evaluation Team should consider a variety of high-tech assistive technologies. It is important to remember, however, that the most expensive assistive technology is not necessarily the best choice.

The Team should take into account the effort needed to obtain and learn to use a device. For a device to be effective, the student should be able to use the technology in a short, reasonable period of time and feel comfortable using the technology. If a device takes months to master, the student will lose valuable instructional time.

The following is a sampling of high-tech devices that can be used to help students with disabilities participate in the general curriculum. See the Student Spotlights beginning on page 16 to learn how some of these devices are used by students.

- Mouse emulators allow physically challenged students to operate computers in a variety of ways. Examples include trackballs, headsticks, touchscreens, and eyegaze systems. Students can also use these devices to select letters from an onscreen keyboard.

- Digital whiteboards allow the teacher to save and print anything that is written on a whiteboard. These devices can be useful to students who have difficulty copying notes from the board.

- Text-to-speech software enables a computer to speak digital text. Talking word processing software provides students with auditory feedback, enabling them to more easily correct spelling and grammar errors.

- Word prediction software can be helpful to students with physical disabilities, as well as students with learning disabilities, because it minimizes physical effort. When the student types a letter, the software presents a list of word choices that begin with that letter.

- Speech recognition software allows a student to speak into the computer through a microphone and have the text appear on the computer screen.

- Augmentative communication tools and applications enable non-verbal students to communicate. The user selects symbols or pictures from a menu or series of menus, and the device speaks the words.

Because there are thousands of assistive technology tools on the market, plus many general tools that can function as assistive technology, this publication does not attempt to describe them all. For more information on specific products, **AbleData (**http://www.abledata.com/) provides a searchable database of nearly 40,000 assistive technology products, including everything from low-tech to high-tech devices. This federally funded, non-commercial service also offers fact sheets, a telephone hotline, and links to disability-related organizations.

The Internet is a great resource for researching assistive technology devices. For example, online videos offer an opportunity to see devices in use. A quick search using the term "assistive technology" will result in hundreds of thousands of videos created by users, family members, assistive technology providers, and manufacturers. Video sites and other consumer-oriented websites also allow people to share their successes and disappointments, including their experiences with products' reliability and durability. Online resources such as the **MassMATCH News Quarterly and email list** (http://www.massmatch.org/whatsnew/newsletter.php) provide a way to keep up as new devices are introduced. Additional newsletters are listed in the Resources section of this guide.

Newer Technologies

It is important to note that, as technology evolves, there are an increasing number of general technology tools that may meet the needs of students of disabilities. One advantage of buying tools created for a mass market, rather than a specialized one, is that they are often less expensive. Perhaps even more important, though, is that students may be more inclined to use these tools. Instead of being embarrassed or humiliated by having to use a device that none of their peers are using, students with disabilities can use the same devices as their peers, perhaps with different applications.

The growing use of tablets and mobile devices has been accompanied by a remarkable growth in the number of applications, or apps, available for these devices. Many of these apps may be useful for students with disabilities. Some apps are designed specifically for people with disabilities, such as communication software for people who are unable to speak. In addition, apps designed for a general audience, such as a colorful app for learning the alphabet or a time management app, may also be helpful for students with disabilities. Apps tend to be low-cost or even free, and they have begun to take the place of some of the specialized tools that have been purchased in the past for students with disabilities.

Many assistive technology tools can also be helpful for students without disabilities. For example, an application that reads text aloud may be helpful for students who are learning English. The same application may be useful to students who need to improve their skills in proofreading their own written work. Providing all students with access to these devices helps realize the goal of accommodating the needs of all students.

With the thousands of apps that are available, it is important to carefully review and assess which specific apps will meet a student's needs. Recommendations are available from many sources, including **Apps as Assistive Technology** (http://www.mainecite.org/index.php/apps-as-assistive-technology-at), a website created by the Maine Department of Education's assistive technology program. Georgia's assistive technology program offers a searchable database of apps both Apple and Android devices, called **Our Favorite Apps** (http://www.gatfl.org/).

Accessible Instructional Materials

Federal law requires public schools to provide an equal opportunity to students with disabilities to participate in, and receive the benefits of, the educational program. When applied to instructional materials, this requirement means that any materials used for instruction must be accessible to students with disabilities. In instances when that is not possible, accommodations or modifications must be provided.

A comprehensive online resource for learning about accessible materials is the **National Center on Accessible Instructional Materials** (http://aim.cast.org/). This website focuses on how schools can serve students who are unable to read or use standard print materials, through the use of specialized formats (braille, large print, audio, and digital text). There are articles and research about effective practices, technical information about NIMAS and related technologies, tutorials, webinars, online forums, and more.

Textbooks and Printed Materials

The Individuals with Disabilities Education Act (IDEA) requires schools to provide accessible versions of textbooks and other printed materials for students who are blind or otherwise unable to use printed materials. In addition, schools need to take steps to assure that students with disabilities receive their accessible materials at the same time as their peers receive their textbooks. See the story of a high school student who is blind on page 16 to learn about the benefit of providing instructional materials in a digital format.

To assist schools in providing accessible materials for students, Massachusetts coordinates with three providers, listed on pages 12 and 13. In order to create materials in alternate formats, these

providers rely on an exemption to copyright law. As a result, the materials are available only to students who fall into one of the categories named in the law. Eligibility is restricted to students who are blind, visually impaired, have a physical disability, or have a reading disability that is physically based.

To streamline the process of producing accessible materials, federal law established the National Instructional Materials Access Center (NIMAC) in 2006. The NIMAC collects digital files from textbook publishers and makes these files available to authorized accessible materials providers. These providers can download files from the NIMAC and convert them into braille, large print, digital text, and audiobooks. To build its repository, the NIMAC depends on participation by school districts. Whenever new textbooks are purchased, districts should require the publishers to send digital files to the NIMAC. [2]

For students who need accessible materials but do not qualify for the copyright exemption, districts can investigate several options: purchasing accessible materials directly from publishers, obtaining electronic files from publishers, getting permission from publishers to adapt existing materials, or adapting materials that are in the public domain (and thus free of copyright restrictions). To adapt materials, many schools scan the printed pages in order to produce an electronic file. The resulting digital text can then be read aloud using a computer with a text-to-speech application.

Books in the public domain can be used by any student, regardless of whether the student has a disability. Used with a text-to-speech application, these books can be useful to a range of students, including those who are learning English. Examples of text-to-speech applications, some of which are free, are available at the **National Center on Accessible Instructional Materials** (http://aim.cast.org/learn/e-resources/software-based/screenreaders_tts). To assist people in finding books in the public domain, **The Online Books Page** hosted by the University of Pennsylvania Libraries (http://onlinebooks.library.upenn.edu/) provides an index of more than one million texts that are freely available on the Internet. Another useful resource is **LibriVox** (http://librivox.org/), which provides free audio files recorded by volunteer narrators; these files can be played on a computer, CD player, or mobile device.

Video and Audio Resources

Whenever video or audio resources are used for classroom instruction, the teacher needs to ensure that they are accessible to students with disabilities. For students who are not able to hear, the media resource should provide the audio information in an alternate format. This could be in the form of captioning, signing, or providing a written transcript of the audio. For students who are not able to see, the media resource should provide a description of the visual component for the student.

One source of accessible video resources is the **Described and Captioned Media Program** (http://www.dcmp.org/). The DCMP media library has over 4,000 free-loan described and captioned media titles, some of which are in Spanish. If a class has at least one student who is deaf, hard of hearing, blind, visually impaired, or deaf-blind, the teacher is allowed to set up a

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[2] For sample language that can be included in a book purchasing contract or purchase order, see page 25 of this guide or the Department's website: http://www.doe.mass.edu/edtech/assistive/nimascontracts.html.

free membership and access the materials. Members can watch media online or order a DVD copy to be shipped to the school. The DCMP website also has information on creating captions.

Another resource is **PBS Learning Media** (http://www.pbslearningmedia.org/), which offers more than 1,000 free online videos with captioning. The website allows users to search for resources with various accessibility features such as captioning and description. There are no eligibility requirements for using the PBS resources; these materials can be used with all students. Captioned media may be helpful to learners without disabilities, such as students who are learning English.

Online Resources

The Internet's vast collection of digital resources can be immensely valuable to all students, including students with disabilities. Properly formatted web pages offers all of the advantages of other digital text, making it possible for the student to use software to enlarge the text, hear it read aloud, translate it into braille, and make other customizations. (See Accessibility Tools below for more information.)

Although online resources can offer many options for students with disabilities, resources that are not properly formatted can create high-tech barriers. The Web Accessibility Initiative, a global project, has established guidelines to make the Web more accessible to people with a wide range of disabilities. For example, to increase access for people with hearing impairments, the guidelines recommend that any video or audio on the site be accompanied by captioning and transcripts. To assist people with visual impairments, who may be using a screen reader, the guidelines recommend ways of organizing the text logically. When evaluating online materials for classroom use, teachers need to be mindful of these guidelines.

To learn more about accessibility on the web, Utah State University's **WebAIM** project (http://webaim.org/intro/) offers a basic introduction, including numerous links with additional information. The **Web Accessibility Initiative (WAI)** provides comprehensive information about many aspects of accessibility on the web, including technical guidelines for creating accessible websites. (http://www.w3.org/WAI/gettingstarted/Overview.html/)

Accessibility Tools

Many common software applications have built-in capabilities that can help to make digital content more accessible to students with disabilities. For example, most applications allow the user to modify the size, color, and style of the font, which can be useful for a student with low vision. Some applications also offer a text-to-speech feature. In addition, computer operating systems have accessibility features that allow the user to magnify the screen, change the size of icons, and adjust the way the mouse and keyboard react.

Microsoft (http://www.microsoft.com/enable/) and **Apple** (http://www.apple.com/accessibility/) both provide detailed online information about how to use the accessibility features in their operating systems and other products, as well as information about how these technologies can help students with disabilities.

There are many other applications that may be helpful to students with diverse learning needs, including free online tools, browser add-ons, and commercial products. A good place to look for

these applications is in the Examples and Resources section of the **National Center on Universal Design for Learning** (http://www.udlcenter.org/implementation/examples).

Virtual Courses

Like online resources, virtual courses need to be accessible to students with disabilities. As virtual courses become more widespread, accessibility is particularly important. In addition to the issues described above, schools offering virtual courses need to consider the accessibility of the learning management system used to house and present the courses. All students need to be able to independently complete tasks such as logging into the system or accessing the discussion forum. This includes students who use screen readers, those who use keyboard commands instead of a mouse, and those who use other assistive technologies. Clearly, the content of the course needs to be accessible as well. As courses become more interactive and multimedia elements become more pervasive, it is essential to keep this in mind.

There are a number of resources to help schools learn about these issues. The **Center on Online Learning for Students with Disabilities** (http://centerononlinelearning.org/) offers a variety of resources, including accessibility information for applications commonly used by students in online environments. **CANnect** (http://www.cannect.org/accessibility-tips.html), a consortium focusing on virtual education for people with disabilities, also offers useful resources on accessibility. In addition, experts at the **UK's Open University** have developed a set of principles and specifications related to the accessibility of Moodle, a widely used open source content management system. (http://docs.moodle.org/dev/Moodle_Accessibility_Specification#Principles_of_Accessibility)

Emerging Technologies

As schools experiment with new technologies, it is important to keep in mind that all students need to have equal access to these technologies. Technologies such as e-readers have the potential to greatly enhance learning opportunities for students with disabilities. Students who are blind can listen to text using the e-reader's built-in capabilities, while students with reading disabilities can make use of this same feature—without needing to wait for specialized materials to be prepared.

Unfortunately, many digital materials are not accessible. A lack of accessibility can make it difficult for students with disabilities to fully participate in educational programs. In 2011 the U.S. Department of Education's Office for Civil Rights addressed this problem by posting an advisory to schools regarding the use of electronic book readers and other emerging technologies (http://www2.ed.gov/about/offices/list/ocr/letters/colleague-201105-ese.html). According to the advisory, schools cannot require the use of electronic book readers—or any other technologies— that are not fully accessible to students with disabilities, unless students receive accommodations offering "all the educational benefits provided by the technology in an equally effective and equally integrated manner."

To ensure that materials and technologies are accessible, schools should include accessibility criteria in their purchasing practices and contracts. For guidance in setting up these processes, school leaders can turn to an initiative created called **Purchase Accessible Learning Materials** (http://aim.cast.org/learn/practice/palm) created by CAST, a national leader in accessibility. CAST suggests that by asserting their power as purchasers, schools can increase the availability of accessible materials. Moreover, when schools purchase accessible materials, many students

can reap the benefits. Students with disabilities will be able to access the content, while students without disabilities may find it helpful to use the supportive features included in accessible materials.

Assessments

All students, including students with disabilities, are required to participate in statewide MCAS testing for their grade level. A student's Team (either the IEP Team or the 504 team) is responsible for determining and documenting how the student will participate in MCAS testing. If the Team deems it necessary, a student may use certain accommodations, including assistive technologies, when taking an MCAS test. The Team may recommend, for example, the use of a word processing device for a student who has difficulty with handwriting and uses word processing as part of his or her instructional program. The testing accommodations should be limited to those that the student uses routinely during classroom instruction and assessment in a subject.

The Department permits a wide range of testing accommodations to allow students with disabilities to access the tests and demonstrate their knowledge and skills. Also available are special test formats, including braille, large print, American Sign Language DVD, and Kurzweil 3000 CD. Guidelines for making decisions and implementing accommodations are spelled out in the Department's publication "Requirements for the Participation of Students with Disabilities in MCAS." If a student has significant disabilities and is unable to participate in the regular MCAS, the Team may recommend the MCAS Alternate Assessment (MCAS-Alt), which involves compiling a portfolio throughout the school year. Specific information about the state's assessment requirements is available on the **Department of Elementary and Secondary Education's MCAS web page** (http://www.doe.mass.edu/mcas/).

Massachusetts is a member of the **Partnership for the Assessment of Readiness for College and Careers or PARCC** (http://www.parcconline.org/), a consortium of 23 states that is developing a "next-generation assessment system." The Department expects to administer these new tests online beginning in the 2014-2015 school year. With the administration of online testing, accommodations may be provided in different ways, with many accommodations built into the online system. In addition, PARCC plans to create test items that adhere to Universal Design for Learning principles so they will be accessible to all students, to the greatest extent possible, reducing the need for accommodations. Massachusetts is participating in PARCC's working group to provide advice on issues of accessibility, accommodations, and fairness.

State Resources and Initiatives

The Massachusetts Department of Education has been working in a variety of ways to promote the use of assistive technology, accessible materials, and Universal Design for Learning.

Educator Professional Development

The Department has provided professional development on assistive technology since 1997. In recent years, professional development has been provided through week-long summer institutes, which are announced each spring on the Department's website. These institutes are open to virtually all Massachusetts educators; however, priority is given to educators from high-needs school districts.

Since 2008, the Department has also provided professional development through the online Massachusetts FOCUS Academy. The courses help educators gain a better understanding of how disability impacts student learning and provides them with improved skills in the areas of curriculum design, instruction, Universal Design for Learning, and assistive technology. While any educator may apply to take a course, space is limited, and priority is given to educators from targeted districts, as well as those whose teaching roles will allow them to best make use of what they learn in the courses.

Preparing New Teachers

As a result of a state law approved in 2010,[3] instruction on the appropriate use of augmentative and alternative communication and other assistive technologies must now be included in programs that prepare new special education teachers. During the 2011-2012 school year, the Department worked with institutions of higher education to ensure that they would be ready to meet this new requirement. As of September 1, 2012, anyone who has completed an approved educator preparation program in Massachusetts with the goal of receiving a Massachusetts license to teach students with moderate or severe disabilities will have received at least an introduction to the topic of assistive technologies.

Accessible Instructional Materials

Massachusetts coordinates with several providers that have received federal and/or state funding to help schools obtain accessible instructional materials for students with disabilities. Eligibility is restricted to students who are blind, visually impaired, have a physical disability, or have a reading disability that is physically based. To access these materials, schools can contact one of the state-authorized providers listed below. Because these providers have received federal and/or state funding, they may be able to provide the needed materials at no cost to the school district.

- **Accessible Instructional Materials (AIM) Library** (http://www.aimlibrary.org/)
  The state's AIM Library lends specialized educational materials such as braille and large print books to eligible blind and visually impaired students. Responding to requests by certified teachers of the visually impaired, the library provides accessible versions of textbooks, workbooks, and works of literature. The library also borrows, purchases, or contracts with vendors to produce the needed books if they are not available in its collection. In addition, the AIM Library circulates materials available through the American Printing House for the Blind, such as early literacy skill builders, math manipulatives, accessible media devices and braille note takers.

- **Learning Ally** (http://www.learningally.org/)
  Formerly known as Recording for the Blind and Dyslexic, Learning Ally provides audio versions of textbooks and other books that students need to read. Books are available as downloadable audio and CDs, which can be played on various portable devices. Learning Ally audiobooks are recorded using the human voice and include figure, graph and picture descriptions.

- **Bookshare** (http://www.bookshare.org/)
  Bookshare offers downloadable digital text for textbooks and other books. Using

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[3] The text of the law, *An Act to Improve Augmentative and Alternative Communication Opportunities for Children,* is available online at http://www.malegislature.gov/Laws/SessionLaws/Acts/2010/Chapter299.

software or apps provided by Bookshare (or other popular text-to-speech applications), students can listen to text while they viewing it on a computer screen or portable device. Digital braille files are available for use with refreshable braille devices.

Massachusetts also coordinates with the National Instructional Materials Access Center (NIMAC). The NIMAC collects digital files from textbook publishers and makes these files available to authorized users. The authorized users manage the process of converting these files into student-ready accessible formats, including braille, audio, and digital text. Coordinating with the NIMAC can make it easier for district to obtain accessible books for qualifying blind, visually impaired, and print-disabled students. Massachusetts has designated the three organizations listed on the previous page as authorized users of the NIMAC. For the easiest access to NIMAC materials, schools should contact one of the authorized users directly, as opposed to going to the NIMAC.

Other Accessible Print Materials

For recreational reading, including fiction, nonfiction, magazines, and newspapers, there are two additional libraries supported in part by the Massachusetts Board of Library Commissioners. These libraries are part of a national network of the National Library Service for the Blind and Physically Handicapped (NLS). These cooperating libraries circulate braille, large print, audiobooks, and described videos to eligible borrowers by mail. Materials can be ordered online, and downloadable materials are also available. All of the services are free, including the loan of specialized digital audiobook players. The two Massachusetts locations also offer the additional resources described below.

- **Perkins Braille & Talking Book Library** (http://www.perkins.org/community-programs/btbl/)
  Located at the Perkins School for the Blind in Watertown, the library has a browsing area with a variety of new titles and old favorites in digital cartridges, braille, or large print. The library also has a display of playback equipment. A public access computer is equipped with assistive technology.

- **Worcester Talking Book Library** (http://www.worcpublib.org/talkingbook/index.htm)
  Located at the Worcester Public Library, the library has Internet-connected computers for public use, along with braille translation software, screen reader software, text-to-speech software, a braille embosser, and a scanner.

Resources and Equipment

A variety of resources are available through Maximize Assistive Technology in Consumer's Hands, or **MassMATCH** (http://www.massmatch.org), the state's federally funded assistive technology project. The project reflects the work of Massachusetts human services agencies, community-based organizations, and assistive technology users, offering information on technologies, demonstration and loan programs, events, workshops, legislation, and more.

MassMATCH has **Assistive Technology Regional Centers** (http://www.massmatch.org/inventory/) in Boston and Pittsfield, where educators, parents, and students can learn about, try out, and borrow the latest equipment. The short-term loan program offers an opportunity to assess what equipment works best for a person before a purchase is made. The technology inventory is

available online for browsing, and users can now reserve items online before visiting the library to pick them up.

Another MassMATCH initiative, the **Assistive Technology School Share Program** (http://atschoolshare.massmatch.org/), offers an online tool for schools to track their assistive technology inventory, determine their needs for a given year, and, if they so choose, lend unused technologies to other schools or districts. In addition, MassMATCH offers an online "classified ad" resource to help people buy, sell or give away used AT equipment.

Massachusetts Hospital School

The Massachusetts Hospital School serves students who have serious and complex health-related conditions and require a hospital-type setting. Entrance criteria are set by the Department of Public Health (DPH). Once a student is accepted by DPH, the hospital site offers residential, clinical and education programs. The Department of Elementary and Secondary Education, through its office of Special Education in Institutional Settings, provides the educational and special educational program on the Hospital School site. The educational program offers general and special education, with related services provided through a varied curriculum of academic and functional life skills, creative arts, and vocational services. In addition to this varied curriculum, the program also offers access to adaptive equipment, alternative communication systems, assistive technology, computer-based learning, and independent living skills training, depending on the identified needs of the students. The school program has a unique resource provided by DPH: a group of highly skilled specialists who design, fabricate, build, modify, and repair custom aids and devices to assist and enhance students' mobility and communication, as well as their educational, recreational, physical, and lifestyle needs. The **Massachusetts Hospital School Foundation's** website (http://www.mhsf.us/) offers a glimpse inside the school, with information, photographs, and links to videos.

Assistive technology is essential for many of the students at the school, and the staff has been creative in devising tools to help students access the curriculum and activities. The music program has received national recognition for its innovative use of custom software and assistive technology that allow students to perform together in a band.[4] Following a conductor, students use various adaptive input devices to sound notes and rhythms on a computer. The drama program has also been made accessible through the use of technology. Using custom software, a computer becomes a teleprompter for students who are unable to memorize their lines. The software also allows non-verbal students to trigger spoken text or sound effects using wireless switches. As a result of technological innovations like these, students are able to take part in a rich variety of activities at the school.

Looking Towards the Future

Technology holds great promise for improving the lives of students with disabilities. Assistive technologies can help students access the curriculum, succeed in school, and enjoy a variety of extracurricular activities. New technologies are constantly emerging, with the potential to improve access for students and make the use of adaptations less cumbersome. As mainstream technologies become more robust, these new technologies may even replace some of the more

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[4] Articles and videos about the music program are available at http://www.switchintime.com/headbangers/ .

specialized technologies that were used in the past, allowing students with disabilities to use the same devices as their non-disabled peers. Also, as schools strive to create universally designed curricula and digital learning environments, students will not need to feel "different" because they use technology to access the curriculum.

Even though today's technologies have tremendous potential to help students with disabilities, it is important to keep in mind that some devices and materials are not accessible. Moreover, even the latest technological developments and universally designed curricula do not necessarily eliminate the need for assistive technologies. Schools should ensure that whatever they purchase is accessible and compatible with any assistive technologies students are already using. A thorough assistive technology evaluation for each student is critical to ensure that the selected technologies will best meet that student's specific needs. Additionally, when purchasing technologies for students with disabilities, schools should carefully research each purchase and steer clear of a one-size-fits-all approach.

Finally, to fully realize the potential of technology to help students with disabilities, schools need to keep abreast of the latest technological advances. Page 35 of this guide highlights assistive technology newsletters that can help schools meet the challenge of staying current. The newsletter and email updates published by the state assistive technology project, MassMATCH (http://www.massmatch.org/whatsnew/newsletter.php), are especially useful, because they provide both state and national news, including listings of assistive technology events and workshops around Massachusetts.

Student Spotlights

Matt

Matt[5] began to learn braille when he was four years old. As he begins his senior year in high school, he and his teachers are devising strategies to ensure his success in college. Matt has a lot going for him, including the fact that he loves technology. He'd like to get a degree in communications, with a minor in computer programming. He's off to a good start; he's already taken a computer programming course and done an internship in a radio station.

Matt uses several devices to access text. An electronic braille notetaker allows him to access what he types by listening or by using the built-in refreshable braille display (a series of pins that are raised and lowered to dynamically display braille). Matt uses this device to email his work to his teachers, as well as to convert text files to and from braille. He also uses a wireless mobile device that has similar features but is much more compact.

Although Matt is a strong braille reader, he uses other formats, too. When reading for pleasure, he likes to listen to audiobooks. However, when he really needs to analyze something, he prefers braille. For Internet research, Matt likes to use his laptop, because its browser is more robust than the one on his braille notetaker. On the laptop, Matt uses electronic screen reading software, which reads aloud all of the text and menus that appear on the computer screen.

An important component of Matt's success has been the support his school has provided. A paraprofessional converts printed materials into accessible formats for Matt. The technology staff provides equipment and support to Matt and his teachers. A Teacher of the Visually Impaired (TVI) consults regularly with Matt and his support team.

Although Matt gives his school high marks, he admits that there have been glitches at times, such as handouts that are not accessible or papers that are graded late because they are in a different format. Matt says it works best when teachers provide plenty of lead time for converting materials. He also suggests that teachers consult with students about what formats to use, rather than always going through the support staff. To help prepare Matt for college, the school is taking his advice, encouraging him to take a more active role in getting the materials he needs.

Matt is not hesitant about advocating for himself and others who are blind. He has spoken at conferences and before Congress, with the goal of breaking down barriers between the blind and sighted worlds. He has a recommendation for teachers: "Don't be put off by technology--it's for everyone's benefit."

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[5] "Matt" is a Massachusetts student, but his name has been changed to protect his privacy.

Julie

Julie[6], a student in southeastern Massachusetts, used to spend most of her school days observing and passively participating in classroom activities. The second grader, who has delays in communication and cognitive skills, was viewed as essentially non-speaking since she spoke only a few words now and then. One activity that Julie really enjoyed was completing word searches, finding hidden words in a grid and circling them. When the regular classroom work was judged to be too difficult for Julie, her teacher gave her word searches to complete instead.

As part of an initial assistive technology assessment Julie was given the opportunity to use word prediction software with audio. The assessment team did not expect this program to be useful to Julie, since she did not seem to have phonemic awareness. Julie was given the starter phrase "I like . . . " She quickly learned how to make the computer read the phrase aloud. With prompting, she completed the phrase verbally, saying "stars." Julie's teacher then typed "Why?" into the program, asking Julie to listen and read the question. Julie then responded appropriately with "because," and with prompting typed the initial letter "b." When the word "because" appeared on the monitor, Julie recognized it immediately, reading it aloud and then selecting it with the mouse.

Julie continued to verbalize her ideas, typing the initial letter for each word, and then searching the word list on the screen for her choice. After just a few trials, she learned that if the desired word did not appear, she needed to type the second letter of the word. In just 20 minutes she went on to type: "I like stars." Why? "Because they are beautiful. I like to clean my room. I like sleeping up in my bed. I like getting up and going to my school bus."

Julie's special education teacher had tears of joy in her eyes as she watched what Julie was able to do on the computer. The teacher hadn't realized that Julie had that much to say. Julie had said more in those 20 minutes than she had all year. Additionally, this was the first time Julie had written a complete sentence.

Additional evaluation sessions resulted in recommendations for low-tech and high-tech assistive technology accommodations and modifications for Julie.

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[6] "Julie" is a Massachusetts student, but her name has been changed to protect her privacy.

Peter

Peter[7], a high school senior in western Massachusetts, is getting ready to send out applications to colleges. Because he enjoys creating artwork on his computer, Peter is thinking about majoring in communications, graphic design, or video production.

Peter, who has dyslexia, says he has always had trouble in school. Over the years, he experimented with various tools to make reading easier. Today Peter uses a text-to-speech application that he credits with changing his life, saying that his grades have gone up and he doesn't have to suffer as much in school.

When he gets a reading assignment, Peter scans the pages of the book, using the program's optical character recognition (OCR) feature.[8] Once the text is in a digital format, the program's text-to-speech feature can be used. The program then "reads" each sentence aloud for Peter, highlighting each word as it is read. If Peter wants to take notes, he can type them and highlight them on the computer screen. When Peter needs to take a test, he scans the test, types his answers, and then prints out the completed test. When he needs to write a paper, Peter proofreads what he has written by having the computer read it aloud to him.

Peter says that his ability to read has improved since he began using this software, although he's not sure why. He says that although the software program doesn't teach him to read, hearing and seeing the words highlighted at the same time and at his own speed helps him remember how to read them.

Peter's advice to educators is to try to be open to new technology. He also suggests that schools try to get digital versions of textbooks, so that students won't have to scan the pages.

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[7] "Peter" is a Massachusetts student, but his name has been changed to protect his privacy.
[8] This spotlight was written prior to 2006, when the National Instructional Materials Access Center (NIMAC) was established. Today, Peter's school could contact one of the state-authorized providers listed on pages 12 and 13 to investigate the possibility of downloading digital files instead of scanning the materials.

Amanda

Amanda[9] is an intelligent, self-assured high school student with cerebral palsy. Because of her disability, she is unable to speak or move her arms or legs. Amanda attends high school at the Massachusetts Hospital School, using a motorized wheelchair to move around the campus. She controls the wheelchair through the use of four switches in the chair's headrest.

Attached to Amanda's wheelchair is a specialized laptop computer system that allows Amanda to participate in both educational and social activities. Amanda uses a head mouse, a wireless device that allows her to operate the computer by moving her head. To converse with others, Amanda uses an augmentative communication application, which offers a selection of frequently used phrases and sentences. Amanda makes a selection, and the program's speech output feature "talks" for her. When Amanda has something more specific in mind, she uses the computer's on-screen keyboard, clicking individual letters using her head mouse. As soon as she types the first letter of a word, the software's built-in word prediction feature presents her with a list of words beginning with that letter. Amanda quickly scans through the list and selects the word she wants. If she doesn't see the word, she types the second letter of the word she wants, and a new list of words appears on the screen. Once Amanda has created a sentence, the computer reads the sentence aloud.

In addition to her communication software, Amanda works with commonly used applications, such as word-processing software and an Internet browser. In mathematics class, she uses specialized mathematics software, which allows her to align numbers on the screen so she can do computations such as long division. Amanda's computer also contains software that enables her to independently control devices in the school's living area, such as the stereo. During the weekends, when Amanda is at home, she enjoys chatting with friends over the Internet.

As a member of the school's disability awareness team, Amanda has spoken with groups of students and teachers about disability issues. She is able to do this because she has become very adept at using assistive technology. When asked about her use of the tools, she acknowledges that while it is easy for her, she thinks that most people, including able-bodied ones, would have difficulty doing what she does.

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[9] "Amanda" is a Massachusetts student, but her name has been changed to protect her privacy.

Frequently Asked Questions

Assistive Technology Requirements and Definitions

Question: What is an assistive technology device?

Answer: According to the Individuals with Disabilities Education Act (IDEA), an assistive technology device is "any item, piece of equipment, or product system whether acquired commercially off the shelf, modified, or customized that is used to increase, maintain, or improve the functional capabilities of children with disabilities." An assistive technology device can be as simple as a rubber grip that enables a student to hold a pencil or as complex as a talking word processor program.

Question: What is an assistive technology service?

Answer: Assistive technology services are those that ensure appropriate selection, maintenance, customization and repair of equipment; those that provide technical assistance, consumer or caregiver training, and peer counseling; and those that help fund equipment through loan, rental, lease, or purchase.

Question: What is the responsibility of the school district in regard to assistive technology?

Answer: The 2004 Individuals with Disabilities Education Act (IDEA) requires that districts provide assistive technology to all students with disabilities if it is needed for them to receive a free appropriate public education (FAPE). The Individualized Education Program (IEP) Team is charged with the responsibility for determining a student's individual need for assistive technology in order to benefit from his or her special education and to have access to the general curriculum. If it is determined that assistive technology devices and/or services are necessary, the IEP must specify the devices and services.

The range of recommendations can be very broad and can include both low-tech solutions and the use of more complex forms of technology. For example, a student with a fine motor difficulty may need a larger than standard pencil or may need to use a special keyboard, whereas a student who is unable to speak may need an augmentative communication device.

Question: Must the school district assume financial responsibility for the purchase of assistive technology devices and services if they are listed in the IEP?

Portions of this section appeared originally in *Commonly Asked Questions About Assistive Technology Devices and Services: An Educators', Parents' and Advocates' Guide,* published by the Maine CITE Program. Answers have been revised where Massachusetts law is different from that of other states. The Department acknowledges and thanks Maine CITE Program for providing this information.

Answer: In most cases, yes. The school district must assume financial responsibility for the purchase of assistive technology devices and services that are identified as necessary by the Team to implement the IEP, unless the cost is covered by third party benefits or insurance coverage and the parents agree to use such coverage to pay the cost, or a donation to the school district is made. School districts may seek funding internally within their own school budgets as well as seek support from other sources. However, the provision of assistive technology devices and services as determined necessary by the Team must not be delayed by efforts to obtain outside funding and/or donations. If parents utilize their insurance coverage, then the parents must not be responsible for paying their insurance deductible and must not be compelled to have homeowners insurance to cover the assistive device(s). In short, there must be no cost to the parents. It is worth noting, however, that school districts do not have to allow the student to use devices purchased with public funds in order to implement the student's IEP for purposes and use that is personal or conducted outside of the IEP services and programs. When AT devices will be shared between home and school, proportionate cost sharing may be appropriate.

Question: Is the school district obligated to provide state-of-the-art technology for students with disabilities?

Answer: No, the school district is not obligated to provide state-of-the-art technology if the student's needs do not require it or if the student is unable to utilize it. A determination as to whether an assistive technology device or service is required in order for a student to receive a free appropriate public education (FAPE) must be made on an individual basis, by the Team. If a specific device or service is necessary to enable the student to access the general curriculum in the least restrictive environment and to provide FAPE, then the district must provide the required device or service regardless of cost. However, if a less expensive device or service would accomplish the same goals, the IEP Team is under no obligation to choose the more expensive option.

Question: Is the school district obligated to pay for assistive technology for a child that has been placed in a private school?

Answer: It depends. If the student is attending an approved private special education school because the IEP requires an out-of-district placement, then the public school pays for whatever the IEP team determines the student needs.

For parentally placed private school students attending parochial or preparatory schools, if the public school district where the student lives generated an IEP that the parent signed stating that assistive technology is required for the student, then Massachusetts state law [603 CMR 28.03(1)(e)(3)] is applicable. The law says that public school districts may provide services described in the IEP at a private school if only federal funds are used. If state or local funds are used, the services must be provided in a public school facility or in another public or neutral site, not on the private school grounds.

For parentally placed private school students with no signed IEP requiring assistive technology, the district is not required to provide it. However, federal law requires districts to provide "proportionate share" services to parentally placed private school students, and the proportionate share of funding could be used to fund the assistive technology, if the district determined it was

needed and included it in the student's individual services plan. For more information on parentally placed students and proportionate share, please see the advisory on the Department's website at http://www.doe.mass.edu/sped/advisories/07_2.html.

Question: Is a school district responsible for retaining, repairing, or replacing assistive technology devices?

Answer: If purchased or secured by the school district, then the school district should retain, repair, or replace assistive technology devices, as long as the student requires them in order to implement the IEP. It is suggested that the special education administrator or his/her designee examine all warranties and contracts that may accompany specific devices. Additionally, if the student's family has provided an assistive technology device that the Team has identified as necessary for the provision of FAPE and has included in the IEP, then the school district, with the agreement of the family, may use the device at school and is responsible to repair or replace the device if necessary.

Question: Is a school district responsible for maintaining a device that parents elect to purchase on their own when the family-owned device is written into the IEP?

Answer: Federal law is silent on this issue. However, it is reasonable to expect a school district to assume liability for an assistive technology device that is family-owned, but used to implement a student's IEP, either in school or at home. In the absence of the family assuming financial responsibility, a school district would be required to provide and maintain a needed assistive device that was written into the IEP. In circumstances where the family has provided the original device, the Department recommends that the school district clarify in its agreements with the family whether the family retains ownership of the device in the case of replacement.

Assistive Technology and the IEP Process

Question: How should assistive technology be included in the IEP?

Answer: If the Team determines the need for assistive technology, the student's IEP should include information about the recommended assistive technology device(s) and service(s), along with the special education services, supplementary aids and services, or related services to be provided. Assistive technology can be included in the IEP in a number of ways. Here are some examples:

- It can be included under the Student Present Levels of Educational Performance, page 2 of the IEP form. Example: "The student will use specially lined paper when there is written work that is not done on the computer."
- It can be included as a goal statement when the student needs to develop technology skills in order to reach curriculum goals. Example: "The student will learn to use a word processing program with spelling and grammar checkers."

- It can be part of a goal statement when assistive technology is needed to carry out specific goal(s). Example: "The student will use a audio recorder to practice her oral language responses."

- It can be included in the Service Delivery grid in section A, B, or C. Example:

> Section A: Consultation
> Focus on Goal #1
> Type of Service: Training for teachers and family members on student's augmentative communication software
> Type of Personnel: Assistive Technology Specialist
> Frequency and Duration: two sessions at 30 minutes per session
> Start date: September 3, 2013
> End date: September 30, 2013

Question: At what point in the IEP process should assistive technology be considered?

Answer: The current Massachusetts IEP development process requires the Team to consider assistive technology prior to developing a student's educational goals. In this way, the Team may be able to identify educational goals that would otherwise not have been attainable for the student with a disability.

Question: What professionals should be on the IEP Team?

Answer: The Team should include persons knowledgeable about the student, the meaning of the evaluation data, and the placement options. In addition, if an assistive technology assessment has been conducted (by a knowledgeable professional), then part of the evaluation data considered will be about assistive technology, and the professional who conducted the evaluation or another person knowledge about assistive technology evaluation data would be present. However, recommendations for assistive technology devices and/or services can be made by any Team member.

Accessible Instructional Materials

Question: Are districts required to provide materials in accessible formats for students with disabilities?

Answer: Yes, federal law requires school districts to provide accessible instructional materials to students with disabilities who need them. Districts must take all reasonable steps to provide print instructional materials in accessible formats to students with disabilities at the same time as other students receive those materials. Accessible formats include braille, large print, audio, and digital text. Digital text can be used with text-to-speech software, magnification software, and braille devices.

Question: Are there any resources to help districts provide accessible materials?

Answer: Yes, Massachusetts coordinates with the three providers below to help schools obtain materials in alternate formats. To create these materials, the providers rely on an exemption to copyright law. As a result, use of these materials is limited to students who are blind, visually impaired, have a physical disability, or have a reading disability that is physically based. Because these providers have received federal and/or state funding, they may be able to provide the materials at no cost to the school district.

> Massachusetts Accessible Instructional Materials Library
> Formats: braille and large print
> Web site: http://www.aimlibrary.org
> Contact: 781-562-0461 or cbrasier@aimlibrary.org

> Learning Ally (formerly Recording for the Blind and Dyslexic)
> Formats: audiobooks (downloadable audio and CDs)
> National web site: http://www.learningally.org/
> Contact: Custserv@LearningAlly.org or 800-221-4792
> Local contact: 617-500-2712

> Bookshare
> Formats: digital text (used with text-to-speech software or braille devices)
> Web site: http://www.bookshare.org/
> Contact: Use the online form at http://www.bookshare.org/contactUs

Question: What should a school do if a student is not eligible to use the materials from the providers listed above?

Answer: School districts are responsible for providing accessible instructional materials for students who need them, regardless of whether the students meet the eligibility requirements outlined in copyright law. Schools can investigate purchasing accessible materials directly from publishers, using scanners to create digital versions of books (using copyright exemptions or obtaining publisher permission), or working with materials that are in the public domain (and thus free of copyright restrictions).

Question: What is NIMAS?

Answer: The National Instructional Materials Accessibility Standard (NIMAS) is a technical standard that curriculum publishers began using in 2006. NIMAS is designed to make it easier and faster to obtain accessible instructional materials. Publishers send NIMAS files to the National Instructional Materials Access Center (NIMAC) when requested to do so by a school district as part of a book purchase. (Requesting NIMAS files does not add to the district's cost of purchasing the books.) These files can then be downloaded by state-authorized entities that produce and distribute braille, large print, digital text, and audiobooks.

Question: Are districts required to participate in the NIMAC's efforts to collect digital files?

Answer: No, each district has the option of participating in the NIMAC. Whether a district does or does not participate, the district will be responsible for ensuring that each child who requires instructional materials in an alternate format receives those materials in a timely manner. The Department recommends that districts choose to participate, because this national effort will help guarantee timely provision of such materials to students.

Question: How can districts participate in the NIMAC?

Answer: When purchasing new textbooks, school districts should require publishers to send files to the NIMAC. This does not add to the cost of the purchase order, and it will help build a national library of electronic files. Most publishers have experience with this process. Below is sample language that schools can include in purchase orders or contracts with publishers.

> The publisher agrees to prepare and submit to the NIMAC, on or before <insert date>, a NIMAS file set that complies with the terms and procedures set forth by the NIMAC. The publisher also agrees to mark up materials eligible for NIMAS submission that contain mathematical and scientific instructional content by using the MathML3 module of the DAISY/NIMAS Structure Guidelines as posted and maintained at the DAISY Consortium web site. If the vendor is a distributor of the materials and not the publisher, the distributor agrees to notify the publisher immediately of its obligation to submit NIMAS file sets of the purchased products to the NIMAC. The files will be used for the production of alternate formats as permitted under the law for students with print disabilities.

Question: How can districts access NIMAS files?

Answer: In most cases, districts will access accessible materials created from NIMAS files, rather than accessing NIMAS files directly. The state-authorized providers listed above will coordinate the conversion of NIMAS files into student-ready alternate formats, which districts can access on behalf of eligible students.

Question: Can students use materials created from NIMAS files if they have a 504 plan and not an IEP?

Answer: No, the law requires that a student have an IEP in order to be eligible to use materials that were produced using files from the NIMAS. However, the state-authorized providers listed above may have non-NIMAS versions available that these students can use.

School and Home Use of Assistive Technology

Question: Is a school district obligated to allow a student to bring an assistive technology device home?

Answer: Maybe. If the IEP Team determines that a particular assistive technology device is required for home use in order for the student to be provided a free appropriate public education (FAPE), and this is communicated in the Individualized Education Program (IEP), then the device must be provided and allowed to go home in order to implement the IEP. Discussion regarding liability while the device is at home needs to be held and recorded in the IEP.

Question: Can schools require students to bring a family-owned assistive technology device(s) to school?

Answer: No. There is no barrier to a student bringing his or her assistive technology device from home to school, but schools have no authority to mandate that this occur. If the family agrees to allow the device to travel from home to school, then a discussion regarding liability while the device is transported to or is at school needs to be held and recorded in the Individualized Education Program (IEP). If a separate rider is necessary for the device to be covered under the family's insurance, then the school district should reimburse the family for this coverage. The family can and may insist that schools provide the necessary devices as part of the student's IEP even if the student has identical device(s) at home.

Supporting the Use of Assistive Technology

Question: In addition to the student, who else should receive training on how to use the assistive technology devices?

Answer: Use of assistive technology without integration into the student's individual goals and objectives will result in less than optimal outcomes for the student. Individuals who live, work, or play with the student should be a part of this process. For a student with a disability, it is often not enough to have the classroom teacher and specialists be the only ones trained in the use of the device. If the device is to be meaningfully integrated into the student's life and general curriculum, significant people such as family members and peers need to be familiar with the assistive technology. Often very limited instruction is needed.

Question: How can a staff member receive individualized training for a specific need?

Answer: In general, if the IEP Team specifies the use of an assistive technology device, then, depending on the individual need(s) of the student, it is the district's responsibility to train appropriate staff members, peers, and family members. In addition to a district-wide professional development plan, special circumstances might arise when it becomes necessary for individuals involved with a specific student to learn how to operate and integrate a device. It is the district's responsibility to either bring in a trainer or offer release time, tuition reimbursement, or conference fees for staff to get the necessary training elsewhere. Any training that is needed should be specified in the Service Delivery grid on the IEP.

Question: If a student requires the use of an assistive technology device(s), what happens to the device(s) when the student graduates?

Answer: Transition planning for technology users is particularly challenging because there is no legal requirement for the transfer of ownership for an assistive technology device from the school to the individual student or to an adult agency upon graduation. Under state and federal law, public schools assume financial responsibility for the assistive technology device and services, but as a student transitions to adult life, the financial responsibility ends, and possession of the device reverts to the school. While there are no formal state policies in place, there is nothing to prohibit creative arrangements that support a seamless transfer of technology as a student graduates. One strategy to consider is collaborating with an adult agency to purchase the technology while the student is still in special education or to purchase it from the school district upon graduation.

Resources

Federal Laws Related to Assistive Technology

Individuals with Disabilities Education Act
http://idea.ed.gov/

Americans with Disabilities Act
http://www.ada.gov/

Section 504 of the Rehabilitation Act
http://www.ed.gov/about/offices/list/ocr/504faq.html

Considering the Need for Assistive Technology

SETT Framework
http://www.joyzabala.com/Documents.html
SETT is an acronym for Student, Environments, Tasks, and Tools—all of which need to be fully explored when assistive technology tools are considered or selected. The website offers a set of forms for collaborative decision making developed by assistive technology expert Joy Zabala.

National Dissemination Center for Children with Disabilities
http://nichcy.org/schoolage/iep/meetings/special-factors/considering-at
This national center offers a wealth of information on related to infants, toddlers, children, and youth with disabilities, including research-based information, publications, newsletters, and a question/answer service. The website includes a checklist that can guide schools in considering assistive technology.

Using and Supporting Assistive Technology

Maximize Assistive Technology in Consumer's Hands (MassMATCH)
http://www.massmatch.org/
MassMATCH is the state's federally funded assistive technology project. Its website reflects the work of Massachusetts human services agencies, community-based organizations, and assistive technology users, offering information on technologies, demonstration and loan programs, events, workshops, legislation, and more.

The Family Center on Technology and Disability
http://www.fctd.info/
This website offers monthly newsletters, success stories, information about disability organizations, reviews of technology resources, and more. Its collection of nearly 1,000 annotated resources can be browsed or searched by topic, disability, and material type. In addition, its newsletter archive provides examples of strategies and tools that are helping students succeed. Some of the resources are available in Spanish.

Quality Indicators for Assistive Technology Services (QIAT)
http://natri.uky.edu/assoc_projects/qiat/
The QIAT Consortium is a national, grassroots group that provides input into the ongoing process of developing, disseminating, and implementing a set of quality indicators for assistive technology services. The QIAT website provides guidelines that can help schools improve their assistive technology services, as well as an email list where educators can participate in online discussions.

Wisconsin Assistive Technology Initiative (WATI)
http://www.wati.org/?pageLoad=content/supports/free/index.php
For more than a decade, school districts across the country have used the WATI materials to help guide them through the process of considering, assessing, implementing, and supporting the use of assistive technology. The publications offer suggested tools and strategies for students with various types of disabilities as well as for various curriculum areas. The website also includes checklists to assist educators in gathering information about a student, the student's environment, and tasks the student needs to complete.

Universal Design for Learning

CAST
http://www.cast.org/
CAST is a Massachusetts organization widely recognized for its efforts to expand opportunities for all students, as well as its development of the concept of Universal Design for Learning (UDL). Its website offers a variety of resources, including a collection of free learning tools that can be used by students, teachers, and parents (http://www.cast.org/learningtools/index.html).

National Center on Universal Design for Learning
http://www.udlcenter.org/
Developed by CAST, this national center provides research evidence, implementation guidelines, examples, news, resources, videos, self-paced modules, and more. As explained on the website, Universal Design for Learning (UDL) "provides a blueprint for creating instructional goals, methods, materials, and assessments that work for everyone--not a single, one-size-fits-all solution but rather flexible approaches that can be customized and adjusted for individual needs." The UDL Guidelines section offers a rich collection of examples and resources (http://www.udlcenter.org/implementation/examples) that teachers can use with students.

Assistive Technology Tools

AbleData
http://www.abledata.com/
This federally funded, non-commercial service provides a searchable database of nearly 40,000 assistive technology products, including everything from low-tech to high-tech devices. It also offers fact sheets, a telephone hotline, and links to disability-related organizations.

Easter Seals Massachusetts
http://ma.easterseals.com/site/PageServer?pagename=MADR_homepage
In addition to its many other services, Easter Seals-Boston is an assistive technology demonstration and loan center, allowing educators, families, and individuals to try out various devices or to temporarily replace a device that is being repaired. These services are offered through the state's MassMATCH program. The website has an online catalog, allowing users to browse through the devices and reserve the one they want to borrow.

United Cerebral Palsy of Berkshire County
http://www.ucpberkshire.org/
In addition to its many other services, UCP-Berkshire is an assistive technology demonstration and loan center, allowing educators, families, and individuals to try out various devices or to temporarily replace a device that is being repaired. These services are offered through the state's MassMATCH program. The website has an online catalog, allowing users to browse through the devices and reserve the one they want to borrow.

Assistive Technology Exchange in New England (getATstuff)
http://www.getatstuff.com/
Sponsored by MassMATCH and the other assistive technology projects in New England, this online resource offers free "classified ads" to help people find, buy, sell or give away used assistive technology equipment.

AT School Share
http://atschoolshare.massmatch.org/
AT School Share is a secure online inventory tracking and sharing tool provided by MassMATCH, the state's assistive technology project. This tool allows members (collaboratives, districts, and schools) to track their inventory of assistive technology devices. It also provides the option for recycling devices that are no longer in use, by allowing members to mark items as available for sharing with other members through short- or long-term loan, sale, or donation.

Mobile Apps

Apps as Assistive Technology (AT)
http://www.mainecite.org/index.php/apps-as-assistive-technology-at
The Maine Department of Education's assistive technology program has created this resource page to help consumers and AT professionals learn more about the mobile devices and apps that are currently being used with students.

Our Favorite Apps
http://www.gatfl.org/
Georgia's assistive technology program offers a searchable database of apps for both Apple and Android devices. All of the apps listed have been and/or are currently being used by the Georgia AT team. They continue to add apps to this database.

Apps for Stages© Recommendations
http://apps4stages.wikispaces.com
Massachusetts AT expert Madalaine Pugliese has created an annotated wiki with recommended apps for students with disabilities. The list is organized from a developmental perspective and offers a rationale for each recommendation.

BridgingApps - Insignio
http://bridgingapps.org/getting-started-with-insignio/
Easter Seals of Greater Houston offers Insignio, an online tool to search, manage, and share both iPad and Android apps. Insignio offers a wide variety of search options, and apps are reviewed by both professionals and users.

Ohio Center for Autism and Low Incidence (OCALI)
http://www.ocali.org/project/document_archive
This archive from OCALI offer annotated lists of apps and other technology tools for students with autism and other disabilities.

Accessible Books

National Center on Accessible Instructional Materials
http://aim.cast.org/
This site focuses on how schools can serve students who are unable to read or use standard print materials, through the use of specialized formats (braille, audio, large print, and digital text). There are articles and research about effective practices, technical information about NIMAS and related technologies, tutorials, webinars, online forums, and more.

Massachusetts Accessible Instructional Materials (AIM) Library
http://www.aimlibrary.org
This state library distributes braille, large print, and other specialized instructional materials to provide visually impaired students with access to the general curriculum.

Learning Ally (formerly Recording for the Blind and Dyslexic)
http://www.learningally.org/
Learning Ally offers a collection of more than 70,000 audiobooks, including recorded textbooks and literature titles, for children and adults with qualifying disabilities. Audiobooks are available as digital downloads, as well as CDs, and free apps are available for popular mobile devices. Learning Ally works with volunteers to record books that its users request.

Learning Through Listening
http://www.learningthroughlistening.org/
Developed by Learning Ally and CAST, this site provides strategies for teaching listening skills, applying these skills to literacy instruction, and using technology for learning.

Bookshare
http://www.bookshare.org/
Bookshare is an online library of more than 170,000 digital books for children and adults with qualifying disabilities. Schools can download textbooks, books, and periodicals, which their

students can access on computers or mobile devices using software or apps that read the text aloud. For students with visual impairments, schools can also download files for use with braille devices.

Perkins Braille & Talking Book Library
http://www.perkins.org/community-programs/btbl/
This library is part of the national network of the National Library Service for the Blind and Physically Handicapped (NLS). It offers recreational reading materials, including fiction, nonfiction, magazines, and newspapers. The library circulates braille, large print, audiobooks, and described videos to eligible borrowers by mail. Materials can be ordered online, and downloadable materials are also available. All of the services are free, including the loan of specialized digital audiobook players.

Worcester Talking Book Library
http://www.worcpublib.org/talkingbook/index.htm
Also part of the national network of the National Library Service for the Blind and Physically Handicapped (NLS), this library is located within the Worcester Public Library. In addition to services offered by other libraries in the network, the Worcester library has Internet-connected computers for public use, along with braille translation software, screen reader software, text-to-speech software, a braille embosser, and a scanner.

National Instructional Materials Access Center (NIMAC)
http://www.nimac.us/
This federally-funded repository receives digital file sets from textbook publishers, and makes these files available to authorized users. These files can then be used to create a variety of specialized formats, such as braille, audio, or digital text. Although schools cannot download files, they can search the NIMAC and then request student-ready materials from one of the state's authorized users, including the Massachusetts AIM Library, Bookshare, and Learning Ally.

Project Gutenberg
http://www.gutenberg.org/
The first project for converting public domain works (works that are no longer covered by copyright) into a digital format, Project Gutenberg now offers more than 40,000 digital texts. Users can search for and download digital texts free of charge and then read them on a computer or mobile device. With the use of a text-to-speech application, users can also listen to the books.

The Online Books Page
http://onlinebooks.library.upenn.edu/
Hosted by the University of Pennsylvania Libraries, this website is an index of more than one million digital texts, which are all freely available on sites all over the web. Users can search for books, and then read them or listen to them using a text-to-speech application.

LibriVox
http://librivox.org/
This free service provides audio files recorded by volunteer narrators; these files can be played on a computer, CD player, or mobile device.

Accessible Media

Described and Captioned Media Program
http://www.dcmp.org/
The DCMP media library has over 4,000 free-loan described and captioned media titles. If a class has at least one student who is deaf, hard of hearing, blind, visually impaired, or deaf-blind, the teacher can set up a free membership and access the materials. Members can watch media online or order a DVD copy to be shipped to the school.

Caption It Yourself
http://www.dcmp.org/ciy/
This site provides basic information on creating captions for teacher- or student-produced videos. It includes information on free Web-based tools for creating captions, guidelines for creating effective captions, and the benefits of captioning.

PBS Learning Media
http://www.pbslearningmedia.org/
PBS offers more than 1,000 free online videos with captioning. The website allows users to search for resources with various accessibility features such as captioning and description. There are no eligibility requirements for using the PBS resources; these materials can be used with all students. Captioned media may be helpful to students who are learning English for the first time.

Online Accessibility

WebAIM
http://webaim.org/intro/
This project at Utah State University offers a large collection of resources, including a basic introduction to online accessibility, with information about how people with various disabilities can access the Web.

Web Accessibility Initiative of the World Wide Web Consortium (W3C)
http://www.w3.org/WAI/gettingstarted/Overview.html/
The Web Accessibility Initiative (WAI), in collaboration with other organizations around the world, pursues accessibility of the Web through technical guidelines, tools, education, outreach research, and development.

Accessibility Tools

Apple
http://www.apple.com/accessibility/
This site offers information about the accessibility features in Apple computers and other devices. A few examples include screen-access technology for blind and visually impaired students, text-to-speech, and a variety of ways to customize the use of the mouse. Apple also has a Special Education page (http://www.apple.com/education/special-education/) with additional information.

Microsoft
http://www.microsoft.com/enable/
This site provides detailed information, tutorials, and videos about how to use the accessibility features in Microsoft products, including the Windows operating system and popular software applications. A few examples include screen magnification, speech recognition, and using the computer without a mouse.

My Web My Way
http://www.bbc.co.uk/accessibility/
The BBC created this website to help users use the accessibility features available on their computers and Web browsers. Using plain English, the site explains how to implement the features available in various computer operating systems, including Windows, Macintosh, and Linux.

Accessible Virtual Education

Center on Online Learning and Students with Disabilities
http://centerononlinelearning.org/
The Center works with teachers, parents, and industry leaders to research and disseminate high-quality reports about engagement, effectiveness, and accessibility of online education for students with disabilities. Partners in this initiative include the University of Kansas Center for Research on Learning, the Center for Applied Special Technology (CAST), and the National Association of State Special Education Directors.

Georgia Tech Research on Accessible Distance Education (GRADE)
http://www.catea.gatech.edu/grade/index.php
Developed by the Georgia Tech Center for Assistive Technology and Environmental Access, this site offers a collection of useful resources, including tutorials and detailed guidelines about making distance education accessible to the widest population of students.

CANnect
http://www.cannect.org/accessibility-tips.html
A consortium dedicated to creating online learning for the blind and visually impaired, CANnect includes the Carroll Center for the Blind in Massachusetts. The website includes detailed information on making courses accessible.

Assessment

MCAS - Participation Requirements for Students with Disabilities
http://www.doe.mass.edu/mcas/participation/?section=sped
This page provides links with information about various options for student participation in MCAS, including testing accommodations that can be used by students with disabilities and the MCAS-Alt, which is designed for a small number of students who are unable to take the standard tests even with accommodations.

News Sources for Assistive Technology and Accessibility

MassMATCH Newsletter and Email Updates
http://www.massmatch.org/whatsnew/newsletter.php

The Family Center on Technology and Disability Newsletter
http://www.fctd.info/newsletters

AT Program News Blog and Newsletter
http://www.atprogramnews.com/newsletter.html

Friends of ATIA (Assistive Technology Industry Association) Newsletter
http://www.atia.org/i4a/pages/index.cfm?pageid=3933

Federation for Children with Special Needs Newsletter
http://fcsn.org/newsline.php
Each newsletter has a section called "Assistive Technology Corner."

Accessible Technology Coalition - News
http://atcoalition.org/news