Access for All
A Guide for Serving Students with Disabilities in Online and Blended Learning Environments

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About Michigan Virtual Learning Research Institute

In 2012, the Governor and Michigan Legislature passed legislation requiring Michigan Virtual™, formally Michigan Virtual University®, to establish a research center for online learning and innovation. Known as Michigan Virtual Learning Research Institute® (MVLRI®), this center is a natural extension of the work of Michigan Virtual. Established in 1998, Michigan Virtual’s mission is to advance K-12 digital learning and teaching through research, practice, and partnerships. Toward that end, the core strategies of MVLRI are:

- **Research** – Expand the K-12 online and blended learning knowledge base through high quality, high impact research;
- **Policy** – Inform local, state, and national public education policy strategies that reinforce and support online and blended learning opportunities for the K-12 community;
- **Innovation** – Experiment with new technologies and online learning models to foster expanded learning opportunities for K-12 students; and
- **Networks** – Develop human and web-based applications and infrastructures for sharing information and implementing K-12 online and blended learning best practices.

Michigan Virtual dedicates a small number of staff members to MVLRI projects as well as augments its capacity through a Fellows program drawing from state and national experts in K-12 online learning from K-12 schooling, higher education, and private industry. These experts work alongside Michigan Virtual staff to provide research, evaluation, and development expertise and support.

Introduction

In the last 20 years, after initially taking hold in higher education, online learning has expanded to include K-12 education. During the 2014-2015 academic year, state-led virtual schools in 24 states served over 462,000 students who enrolled in over 815,000 semester-long courses. When private, district-led, and for-profit virtual schools are taken into account, the total jumps to an estimated 4.5 million online course enrollments (Gemin, Pape, Vashaw, & Watson, 2015). Of these virtual school students, it is estimated that 7.2% qualify for special education, compared to 13.1% of all K-12 students (Molnar, Rice, Huerta, Shafer, et al, 2014). In the United States, federal laws such as the Individuals with Disabilities Education Act and the Rehabilitation Act of 1973 provide for the education of persons with disabilities in the least restrictive environment (LRE) possible. The LRE is commonly taken to mean the setting where students with disabilities can learn best given the same opportunities as their nondisabled peers when provided with accommodations for their individual learning needs. Virtual schools offer an additional placement option (Rhim & Kowal, 2008), one that is growing in popularity as it has the potential to meet the individual education needs of students in a way that traditional public schools are not. The flexibility in time, pace, path, and place (Staker & Horn, 2012) that online and blended learning offer to students seems ideal when considering the individual educational needs of students with disabilities, the LRE, and accommodations. This same flexibility has the potential to take ‘least restrictive environment’ beyond the walls of the traditional classroom and out into students’ worlds.

This guide is designed to provide an overview of different disability groups in order to better understand the needs of each group, some common accommodations for students in each group, and considerations for each group related to online and blended learning environments. Also provided are the terminology and acronyms commonly associated with disabilities and special education, a synopsis of disability law, and a thorough description of individualized education plans and 504 plans. In better understanding the needs of students with disabilities, it is hoped that virtual school educators will be better prepared to help all their students reach optimum success.
Accessibility versus Accommodation

Accessibility and accommodation are often used interchangeably; but in practice, they are actually two different things. It is important to understand the difference between them and what this difference means for virtual school educators.

In recent court decisions, the U.S. Department of Justice and the U.S. Department of Education Office for Civil Rights have determined that "accessible" means that individuals with disabilities are able to independently acquire the same information, engage in the same interactions, and enjoy the same services within the same time frame as individuals without disabilities, with substantially equivalent ease of use (U.S. Department of Education Office of Civil Rights – University of Montana Resolution Agreement, 2013). Examples of accessibility include accessible web pages and instructional materials and content, learning objects, or applications that are designed with appropriate functionality such that they are usable without additional modifications. Accessibility is achieved through the use of identified standards to design environments that can be used by everyone, including persons with disabilities.¹

“Accommodations” are reasonable academic adjustments or auxiliary aids that provide equal access to programs and services on an individual basis. Examples of accommodations include extended time on tests, recording lectures, allowing note-takers, and the use of assistive technology (AT) devices. The Individuals with Disabilities Educational Act (IDEA), as amended in 2004, defines “assistive technology device” as “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 functional capabilities of a child with a disability” (U.S. Department of Education, 2004). Accommodations, including the use of AT, are provided when content requires additional modifications in order to be used by a student. Accommodations are typically requested by a person with a disability, are determined to be reasonable on an individual basis, and may be due to the nature of the individual’s disability rather than the level of accessibility of the learning environment. In an educational environment, students may also be provided with related support services such as speech-language therapy, occupational or physical therapy, or consultation with a special education teacher.

What does this mean for virtual school educators? As a virtual school educator, you are responsible for ensuring that your course is accessible to students with disabilities. Depending on the individual educational needs of a specific student, the educational authority, whether that is the student’s home district or state or the virtual school itself, may also be required to make certain learning accommodations or to provide a student with AT devices or related support services to help them access course material and participate in the educational experience. Ensuring accessibility is most

¹ In January, 2017 the U.S. Access Board published guidelines that update the standards for information and communication technology under Section 508 of the Rehabilitation Act and Section 255 of the Communications Act. These guidelines align with the Web Content Accessibility Guidelines (WCAG 2.0). The WCAG standards can be found at https://www.w3.org/TR/WCAG20/.
easily accomplished during the course design process, using Universal Design for Learning (UDL)\(^2\) principles and following the latest technical accessibility standards and guidelines. This guide will provide some tips for helping to make courses more accessible and will detail accommodations that individual students may require.

\(^2\) Universal Design for Learning (UDL) are guidelines that call for designing learning materials such that they provide for multiple means of representation, multiple means of action and expression, and multiple means of engagement. More information about UDL can be found at [http://www.udlcenter.org/aboutudl](http://www.udlcenter.org/aboutudl).
Special Education Terminology

Special education as a field uses many abbreviations and acronyms. The following list includes terms you may see on an Individual Education Plan (IEP) or in a student’s records. Terms may vary by state or district.³

The following are terms commonly used to refer to special education as a field and special education students as a group:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
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<tbody>
<tr>
<td>ESE</td>
<td>Exceptional Student Education</td>
</tr>
<tr>
<td>LS</td>
<td>Learning Support</td>
</tr>
<tr>
<td>SEN</td>
<td>Special Educational Needs</td>
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</tbody>
</table>

The following are terms relating to special education students, organizations serving disability groups, and disability law:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>504</td>
<td>Section 504 of the Rehabilitation Act of 1973</td>
</tr>
<tr>
<td>508</td>
<td>Section 508 of the Rehabilitation Act of 1973</td>
</tr>
<tr>
<td>ADA</td>
<td>Americans with Disabilities Act</td>
</tr>
<tr>
<td>AYP</td>
<td>Adequate Yearly Progress</td>
</tr>
<tr>
<td>CEC</td>
<td>Council on Exceptional Children</td>
</tr>
<tr>
<td>DOE</td>
<td>Department of Education</td>
</tr>
<tr>
<td>DPH</td>
<td>Due Process Hearing</td>
</tr>
<tr>
<td>ESEA</td>
<td>Elementary and Secondary Education Act of 2015</td>
</tr>
<tr>
<td>ESSA</td>
<td>Every Student Succeeds Act</td>
</tr>
<tr>
<td>FAPE</td>
<td>Free Appropriate Public Education</td>
</tr>
<tr>
<td>FERPA</td>
<td>Family Educational Rights and Privacy Act</td>
</tr>
<tr>
<td>IDEA</td>
<td>Individuals with Disabilities Education Act</td>
</tr>
<tr>
<td>IEP</td>
<td>Individual Education Plan</td>
</tr>
<tr>
<td>LEA</td>
<td>Local Education Agency (a school district)</td>
</tr>
<tr>
<td>LO</td>
<td>Learning Outcome or Learning Objective</td>
</tr>
<tr>
<td>LRE</td>
<td>Least Restrictive Environment</td>
</tr>
<tr>
<td>NCLB</td>
<td>No Child Left Behind Act of 2001</td>
</tr>
<tr>
<td>OCR</td>
<td>Office for Civil Rights, U.S. Department of Education</td>
</tr>
<tr>
<td>OSEP</td>
<td>Office of Special Education Programs</td>
</tr>
<tr>
<td>OSERS</td>
<td>Federal Office of Special Education and Rehabilitation Services</td>
</tr>
<tr>
<td>PEL/PLF</td>
<td>Present Educational Level or Present Level of Functioning</td>
</tr>
<tr>
<td>STO</td>
<td>Short Term Objective</td>
</tr>
<tr>
<td>WCAG</td>
<td>Web Content Accessibility Guidelines</td>
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</tbody>
</table>

³ Definitions for these terms and many others associated with special education can be found at this URL: http://www.picnh.org/nhpti/documents/Dictionary%20of%20common%20special%20education%20terms%20and%20acronyms.pdf
The following are common abbreviations for various disabilities, conditions, and support services that students with disabilities might receive:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADD</td>
<td>Attention Deficit Disorder</td>
</tr>
<tr>
<td>ADHD</td>
<td>Attention Deficit Hyperactivity Disorder</td>
</tr>
<tr>
<td>APE</td>
<td>Adapted Physical Education</td>
</tr>
<tr>
<td>ASD</td>
<td>Autism Spectrum Disorder</td>
</tr>
<tr>
<td>ASL</td>
<td>American Sign Language</td>
</tr>
<tr>
<td>AT</td>
<td>Assistive Technology</td>
</tr>
<tr>
<td>BD</td>
<td>Behavior Disorder</td>
</tr>
<tr>
<td>BIP</td>
<td>Behavior Intervention Plan</td>
</tr>
<tr>
<td>CP</td>
<td>Cerebral Palsy</td>
</tr>
<tr>
<td>DB</td>
<td>Deaf-blind</td>
</tr>
<tr>
<td>DHH</td>
<td>Deaf or Hard of Hearing</td>
</tr>
<tr>
<td>ED</td>
<td>Emotional Disturbance</td>
</tr>
<tr>
<td>EH</td>
<td>Emotionally Handicapped</td>
</tr>
<tr>
<td>ELL</td>
<td>English Language Learner</td>
</tr>
<tr>
<td>ESL/ESOL</td>
<td>English for Speakers of Other Languages</td>
</tr>
<tr>
<td>ESY</td>
<td>Extended School Year</td>
</tr>
<tr>
<td>GT</td>
<td>Gifted and Talented</td>
</tr>
<tr>
<td>HI</td>
<td>Hearing Impaired</td>
</tr>
<tr>
<td>LD</td>
<td>Learning Disabled</td>
</tr>
<tr>
<td>LEP</td>
<td>Limited English Proficient</td>
</tr>
<tr>
<td>LI</td>
<td>Language Impaired</td>
</tr>
<tr>
<td>OHI</td>
<td>Other Health Impaired</td>
</tr>
<tr>
<td>OI</td>
<td>Orthopedic Impairment</td>
</tr>
<tr>
<td>O&amp;M</td>
<td>Orientation &amp; Mobility (for blind and low vision students)</td>
</tr>
<tr>
<td>OT</td>
<td>Occupational Therapy</td>
</tr>
<tr>
<td>PI</td>
<td>Physically Impaired</td>
</tr>
<tr>
<td>PT</td>
<td>Physical Therapy</td>
</tr>
<tr>
<td>SLD</td>
<td>Specific Learning Disability</td>
</tr>
<tr>
<td>SLI</td>
<td>Speech-Language Impaired</td>
</tr>
<tr>
<td>SLP</td>
<td>Speech-Language Pathologist</td>
</tr>
<tr>
<td>VI</td>
<td>Visually Impaired</td>
</tr>
<tr>
<td>VP/VRS</td>
<td>Videophone, Video Relay Service</td>
</tr>
<tr>
<td>VR</td>
<td>Vocational Rehabilitation</td>
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</tbody>
</table>
Understanding Disability Law

Initially passed as the Individuals with Disabilities Education Act of 1975 and commonly referred to as IDEA, the Individuals with Disabilities Education Improvement Act of 2004 (IDEIA) provides for a free appropriate public education (FAPE) in the least restrictive environment – LRE – for persons with disabilities between the ages of three and 22. According to the IDEIA, LRE is taken to mean, in general, to the maximum extent appropriate, children with disabilities, including children in public or private institutions or other care facilities, are educated with children who are not disabled, and special classes, separate schooling, or other removal of children with disabilities from the regular educational environment occurs only when the nature or severity of the disability of a child is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily (U.S. Department of Education, 2004b).

LRE is the foundation for mainstreaming, or the inclusion of students with disabilities in regular education courses.

The Rehabilitation Act of 1973 contains two sections, 504 and 508, that are especially pertinent to the education of students with disabilities in online and blended environments. Section 504 created and extended civil rights to adults and children with disabilities regarding employment and education. Section 504 states that,

No otherwise qualified individual with a disability in the United States . . . shall, solely by reason of her or his disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance (U.S. Department of Education, 2015).

Under Section 504 regulations4, school districts are required to provide a FAPE to each qualified student with a disability who is in the school district’s jurisdiction, regardless of the nature or severity of the disability. Under Section 504, FAPE consists of the provision of regular or special education and related aids and services designed to meet the student’s individual educational needs as adequately as the needs of nondisabled students are met. Section 508 of the Rehabilitation Act5 requires that electronic media and information technology that is created, maintained, or funded by the federal government be accessible to persons with disabilities.

The Americans with Disabilities Act of 1990 (ADA), reauthorized as the Americans with Disabilities Amendment Act of 2008, requires that public facilities be accessible for persons with disabilities. Under the act, a person with a disability must have an impairment that limits life activities, must have a history of impairment, and must be perceived to have an impairment. Title II of the ADA extends the prohibition against discrimination to the full range of state and local government

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4 [https://www2.ed.gov/about/offices/list/ocr/504faq.html](https://www2.ed.gov/about/offices/list/ocr/504faq.html)
5 [https://www.ada.gov/508/](https://www.ada.gov/508/)
services, programs, and activities (including public schools) regardless of whether they receive any federal financial assistance or not (U.S. Department of Justice Civil Rights Division, 2012).
The Individualized Education Plan or 504 Plan

Students with disabilities and other special learning needs are served under IEPs or 504 Plans, depending on the nature of their disability and the extent to which the disability affects learning.

The IEP

Under IDEA (2004), every public school student who receives special education and related services must have an IEP – an Individualized Education Program or Individualized Education Plan. Students must be identified as eligible to receive services for one or more of 13 disability categories. Under IDEA, these disability categories are: autism, deaf-blindness, deafness, emotional disturbance, hearing impairment, intellectual disability, multiple disabilities, orthopedic impairment, other health impairment, specific learning disability, speech or language impairment, traumatic brain injury, or visual impairment (including blindness) (Individuals with Disabilities Education Improvement Act of 2004). The purpose of an IEP is to help the student access the general curriculum and to identify the student's present level of functioning, annual goals, and need for special education and related services; their need for transition services, how and when support services will be delivered, and how progress towards goals will be measured. Each IEP is designed for the individual student based on his/her individual needs by an educational team of teachers, parents/guardians, school administrators, related services providers, and the student, when appropriate (U.S. Department of Education, 2007).

While the format of an IEP will vary between states and districts, the following components are required under IDEA’s Part B requirements (U.S. Department of Education, 2007).

- Student’s Name and Date of Birth
- Date of Meeting to Develop or Review the IEP (Must occur annually)
- Present Level of Educational Performance (Must include a statement of how the student’s disability affects the student’s involvement and progress in the general curriculum)
- Measurable Annual Goals (including benchmarks and short-term objectives)
- Special Education and Related Services (including start date, location, frequency, and duration)
- Supplementary Aids and Services (including start date, location, frequency, and duration)
- Program Modifications or Supports for School Personnel (including start date, location, frequency, and duration)
- Explanation of Extent, if Any, to which the Student Will Not Participate with Nondisabled Students
- Administration of State and District Assessments of Student Achievement (Must include an explanation if it is determined that state or district assessments aren’t appropriate to the student and details on how they will be alternately assessed)
- Any Individual Modifications in Administration Needed for Student to Participate in State or District Assessments
- How Student’s Progress Toward Annual Goals Will Be Measured
- How Parents Will Be Informed of Their Child’s Progress
• Statement of Transition Service Needs (if the student is aged 14, or younger if deemed appropriate by the IEP team)
• Statement of Needed Transition Services, Including, if Appropriate, Statement of Interagency Responsibilities or Any Needed Linkages (Beginning at age 16 or younger if deemed appropriate by the IEP team. Transition services may include instruction, related services, community experiences, post-school adult living objectives, and daily living skills or functional vocational evaluation.)
• Transfer of Rights at Age of Majority (Students must be given notice of his or her rights at least one year before they reach the age of majority.)
• Signatures of IEP Team Members and Attendees

The 504 Plan
Section 504 of the Vocational Rehabilitation Act of 1973 requires a school district to provide a “free appropriate public education” or FAPE to each qualified student with a disability who is in the school district’s jurisdiction, regardless of the nature of the disability. Under Section 504, districts are obligated to provide regular or special education and related services or aids designed to meet the student’s individual educational needs as adequately as the needs of nondisabled students are met. For students with disabilities who do not require specialized instruction but need the assurance that they will receive equal access to public education and services, a 504 Plan may be developed and reviewed annually to ensure that the student is receiving the most effective accommodations for his or her specific needs. A 504 Plan generally includes the specific accommodations, supports, or services a student will need and identifies who will provide each service (U.S. Department of Education, 2015).

The Difference between an IEP and a 504 Plan
Students with disabilities who receive special education and related services will have an IEP while students with disabilities who do not receive special education services but who still require accommodations will have a 504 Plan. While an IEP provides for individualized special education and related services to meet a student’s unique needs, a 504 Plan provides for accommodations and changes to the learning environment to meet the student’s needs in the general curriculum. Requirements for IEPs are defined under the IDEA while requirements for 504 plans fall under Section 504 of the Rehabilitation Act of 1973. Services for students on 504 plans are not funded by the special education funds provided under IDEA.
Serving Students with Learning Disabilities

Understanding Students with Learning Disabilities
According to the IDEA (2004), students with a specific learning disability have a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations” (Individuals with Disabilities Education Improvement Act of 2004).

Learning disabilities are associated with such conditions as perceptual disabilities, traumatic brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include learning difficulties that result primarily from other sensory, motor, developmental, intellectual, or emotional disabilities, nor from environmental, cultural, or economic disadvantage (NICHCY, 2012, p.4). Learning disabilities often have an impact on students’ abilities and functioning in spoken language with listening and speaking skills; written language skills with reading, writing, or spelling; mathematics and calculation; and reasoning or organization and integration of ideas and thoughts (Friend & Bursuck, 2015). Students may have difficulty in decoding, comprehending, and tracking online text as it requires more working memory capacity and self-regulation than regular print (Rice & Greer, 2014). Learning disabilities may coincide with other disabilities such as mobility or sensory disabilities, brain injury, developmental delays, or emotional disturbances (DO-IT, 2016).

Accommodating Students with Learning Disabilities
Specific learning disabilities may have an impact on students’ perception and processing of sensory information. Accommodations for students with learning disabilities are unique to each individual student’s needs. Some common accommodations include note takers or the ability to record lectures, extended time on assignments and tests (typically 150% to 200%), breaks, alternate testing settings where there may be fewer distractions, text-to-speech software, flexible response (students may respond orally or in another modality than the one assigned), and the use of assistive devices for spelling, grammar, and calculation. Students with learning disabilities may also benefit from additional formative feedback to help them with larger assignments and projects, organization, chunking of component tasks, proofreading, and time management (DO-IT, 2016; Friend & Bursuck, 2015; Rice & Greer, 2014).

Students with Learning Disabilities in Online and Blended Environments
Online and blended courses offer both benefits and challenges to students with learning disabilities. While students may struggle with courses that are largely text-based and those that are faster paced, a well-designed online or blended course offers students structure and organization of content that they might find difficult to do on their own.
**Course Structure**

Online and blended courses often make use of activities and assignments that are scaffolded to build upon each other as students work toward mastery of learning outcomes. Because content is presented in electronic format, it is often, though not always, more accessible to students using assistive technologies such as text-to-speech, and students can view and review lectures or content as many times as needed. Courses that are developed using UDL principles present content with multiple means of representation and offer flexibility for students to have multiple means for demonstrating learning.

**Participation**

Asynchronous courses allow students to have extra time to compose responses to online discussions, and students may have the option to respond via text, audio, or video. Online and blended courses may help students with learning disabilities to build social confidence as they can participate in the course without fear of being viewed by other students as “dumb” and without fear of being called on suddenly by the teacher. Conversely, these students may need extra encouragement to participate in online discussions that are text-based or be offered the option to participate using audio or video responses.
Serving Students with Emotional or Behavioral Disturbances

Understanding Students with Emotional or Behavioral Disturbances

According to the IDEA (2004), students with an emotional disturbance exhibit “one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child’s educational performance:

(a) An inability to learn that cannot be explained by intellectual, sensory, or health factors;
(b) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers;
(c) Inappropriate types of behavior or feelings under normal circumstances;
(d) A general pervasive mood of unhappiness or depression;
(e) A tendency to develop physical symptoms or fears associated with personal or school problems.

The term includes schizophrenia. The term does not apply to children who are socially maladjusted, unless it is determined that they have an emotional disturbance” (NICHCY, 2012, p.3).

Emotional disturbances in students might manifest themselves in behavioral characteristics such as hyperactivity, aggression, self-injurious behavior, withdrawal, immaturity, or problems learning (Council for Children with Behavior Disorders, n.d.).

Sometimes students with behavioral disturbances might be receiving services because they are eligible due to an “other health impairment” (IDEA, 2004). Other health impairment is defined as having limited strength, vitality, or alertness, including a heightened alertness to environmental stimuli, that results in limited alertness with respect to the educational environment, that— (a) is due to chronic or acute health problems such as asthma, attention deficit disorder or attention deficit hyperactivity disorder, diabetes, epilepsy, a heart condition, hemophilia, lead poisoning, leukemia, nephritis, rheumatic fever, sickle cell anemia, and Tourette syndrome; and (b) adversely affects a child’s educational performance (NICHCY, 2012, p. 4).

Children with Tourette syndrome have a neurological disorder characterized by behavioral manifestations that present themselves as repetitive, stereotyped, involuntary movements and vocalizations called tics (National Institute of Neurological Disorders and Stroke, n.d.).

In addition, some students with behavioral disturbances receive services due to Traumatic Brain Injury (TBI) (IDEA, 2004). The law recognizes TBI as an acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's educational performance. The term applies to open or closed head injuries resulting in impairments in one or more areas, such as cognition; language; memory; attention; reasoning; abstract thinking; judgment;
problem solving; sensory, perceptual, and motor abilities; psychosocial behavior; physical functions; information processing; and speech. The term does not apply to brain injuries that are congenital or degenerative, or to brain injuries induced by birth trauma (NICHCY, 2012, p. 4).

Students with TBI might have physical, cognitive, or sensory symptoms such as a state of being dazed, confused, or disoriented; having a headache; becoming dizzy or experiencing a loss of balance; experiencing memory or concentration problems; having bouts of feeling depressed or anxious; becoming agitated, combative or exhibiting other unusual behavior; or experiencing slurred speech (Mayo Clinic, n. d.).

**Accommodating Students with Emotional or Behavioral Disturbances**

When working with students with emotional or behavioral disturbances, effective teachers recognize that some students exhibit decreased attention, impaired organizational skills, and difficulty with their problem solving ability as a result of their disability; these all potentially have a deleterious impact on educational achievement. The student might present a myriad of cognitive characteristics such as memory deficits, poor concentration or judgment, and information processing deficits within the learning environment; these might affect a student's ability to deal with abstract concepts. In order to help students deal with these cognitive skills, the teacher can:

- Be consistent in presentation of new materials, and provide repetition and scaffolding of instruction;
- Make new skills or tasks as concrete as possible through demonstration while providing examples within the student's experience;
- Start slow: encourage and reinforce the student for attending to the instructional task for successively longer periods of time;
- Conduct frequent formative assessment probes to determine the speed and accuracy of newly learned material; and
- Teach students metacognitive skills, and encourage them to think about their thinking.

AT applications, programs, and devices exist that are used to support the student experiencing memory and organization difficulties. Items such as online calendars, schedulers, or homework organizers assist students needing organizational supports and strategies. For students who need help with grammar and spelling, word prediction programs and spelling supports are available. Finally, supplemental materials using multi-media resources available on the web can assist students needing differentiated instructional materials to meet their level of instructional needs.

Often, behavioral or emotional symptoms might present themselves within the learning environment. There are a wide variety of behavioral manifestations such as depression, feelings of despair or helplessness, irritability, labile or inappropriate emotions, distractibility, impulsive behaviors, low frustration tolerance, aggression, and loss or reduction of social inhibitions. Any or all of these might present themselves as behavioral manifestations of the disturbance in an instructional setting. Students with emotional or behavioral disorders only receive special education because of the impact their disorders have on their academic learning. Students probably
receive both proactive as well as reactive interventions and services specified within their IEP when maladaptive behavioral instances occur. Quite often, the best way to deal with a behavioral situation involves helping to ensure that the likelihood of it occurring is diminished. Allowing students to have time to process information or work through periods of frustration with a specified adult might support the student’s goal of becoming more behaviorally self-modulating. Allowing students to choose from multiple modes to demonstrate competency towards educational goals or objectives might alleviate or decrease the potential for problem behaviors. Finally, providing clear and consistent instructional and behavioral messages allows the student to gain trust and assurance from the adults in the setting. There are many tools and applications (such as the Zones of Regulation, the Self-Regulation Scale, the 5 Point Scale, positive behavior supports, the DIY self-regulation jar, etc.) that can assist students with their self-control and self-regulation of negative emotions and assist them in calming themselves down. When these tools are not successful, adults that have been specifically trained and identified to help deescalate the situation may need to be called as a resource.

Due to the student’s behavioral or emotional disability, she/he might experience social skills deficits with peers and adults. These might manifest themselves as difficulty in establishing or maintaining relationships, an inability to restrict socially inappropriate behaviors, exhibiting inappropriate responses to stimuli within the environment, exhibiting insensitivity to the feelings of others, a limited initiation of social interactions, and social isolation. Students exhibiting these types of behaviors usually have a behavioral support plan in place with very specific procedures and programs that need to be followed when the targeted behaviors mentioned above occur. AT applications and materials (such as Boardmaker, talking lights, incentive charts, visual timers, and mood thermometers) can be used as resources to help students identify when occurrences arise and when there is a need for them to reassess their behavioral presentation to others in the environment.

**Students with Emotional or Behavioral Disturbances in Online and Blended Environments**

**Individualized plans**

Students with emotional or behavioral disturbances enrolled in an online or blended learning environment will continue to struggle with behavioral situations, which will continue to affect their academic achievement without proper programs, supplementary aides, or supports. A new individualized educational planning meeting should be called to address the specifics that students will find themselves in with the change of instructional format and setting. The personnel responsible for programming in the online or blended environments need to understand the student and the issues she/he brings to the program. Online staff should have a complete understanding of the requirements contained within the IEP, and supplementary training should be provided related to the student's disabilities and specific measures that can be taken to ensure compliance with written plans and compliance expectations.

**Peer and other support**

All of the recommendations provided to meet the academic, social, and behavioral needs of students with behavioral or emotional disturbances in a face-to-face environment probably should
be considered for continued use in an online or blended format. The student is accustomed to these supports and interventions and has probably relied upon them in the past with the support of school personnel at their disposal. However, due to the fact that online environments often leave the student needing to rely upon their own problem-solving skills when issues arise, the student with a disability might need extra opportunities to meet with the teacher or identified support staff assigned to them to assist the student with behavioral or emotional disturbances in troubleshooting technological, cognitive, behavioral, or interpersonal issues that arise. Intentionally scheduling “office hours” with the student and instructor on a proactive, routine basis will provide the student and the instructor the opportunity to discuss issues of concern. Allowing the student to work cooperatively with an understanding peer might assist the student with emotional or behavioral disability to talk through expectations in the learning environment from a cognitive, educational, social, or behavioral level.

**Managing academics**

For the student with cognitive or academic issues, use calendars to provide advanced organizers, reminders, and deadlines that assist in planning workloads and meeting schedules and deadlines. Providing written transcripts for all multimedia content will help students that have difficulty with the pace and ambient noise that often accompanies instructional modules.
Serving Students with Autism

Understanding Students with Autism

According to the IDEA (2004), students with autism exhibit

a developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age three, that adversely affects a child's educational performance. Other characteristics often associated with autism are engaging in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences. The term autism does not apply if the child's educational performance is adversely affected primarily because the child has an emotional disturbance ... A child who shows the characteristics of autism after age 3 could be diagnosed as having autism if the criteria above are satisfied (NICHCY, 2012, p. 2).

It is important to recognize that autism is considered a spectrum disorder with cognitive, social, and adaptive behavioral abilities ranging from being very impaired to no impairment at all. The extent to which the characteristics of autism impact each student is very individualized and at times may not be consistent across instructional or educational settings.

Autism is a lifelong developmental disability. Individuals with autism will have differences in verbal and nonverbal communicative function, have difficulties with social interaction skills with peers and teachers, and may present behavioral manifestations that do not appear to be elicited by the environment (Autism Society of Michigan, n.d., Autism Speaks, n.d.).

Individuals with autism have impaired degrees of communicative functioning, both verbal and nonverbal, with language development often being delayed, slow, or atypical when compared to their chronological peers. In social or educational situations, an individual may be unable to sustain or understand conversations unless the topic is related to something of personal interest to her or him. When preferred topics do arise, students with autism generally have a tremendous ability to discuss issues in great detail, often monopolizing the conversations. Idioms, metaphors, abstract topics, or the perspective of others are often difficult for students with autism to understand. The lack of ability to understand nonverbal cues or communication also causes a great deal of social difficulty for students with autism. Issues related to recognizing the personal space of others, appropriate eye contact, social conventions, and the need to attend to personal hygiene issues often present social stressors for the autistic individual (Autism Society of Michigan, n.d., Autism Speaks, n.d.).

From a social perspective, individuals with autism tend to be socially delayed a number of years when compared to their chronological peers. Students with autism often are significantly impaired in their ability to understand pragmatics, or social language, and this causes difficulties with the observation, imitation, and attribution of social skills and interactions. This has a negative impact on the student's ability to participate in social situations outside of his/her experience or understanding. Unique situations or social interactions with new people can cause stress and
anxiety for individuals with autism. Large crowds and extensive ambient sounds may affect the person with autism’s ability to understand social interactions due to central auditory processing impairments.

Students with autism often exhibit physical manifestations such as hand flapping, lunging, rocking, or behaviors that are outside the context of the social situation. Some children can display self-injurious behavior or aggressive behavior issues. Often individuals with autism can have hyper or hypo sensitivity to sensory inputs such as sights, sounds, tastes, smells, vision, or touch. Response or reactions to challenging sensory issues may manifest themselves in maladaptive or socially unacceptable behaviors (Autism Society of Michigan, n.d., Autism Speaks, n.d.).

Students with autism have difficulty with executive functioning. Problems in the area of cognitive ability can impact their capacity to estimate or visualize appropriate outcomes in learning environments or social situations. It also affects their ability to anticipate consequences or mentally evaluate the outcomes from different problem-solving strategies. Finally, an impairment in executive functioning may influence the student’s ability to choose the most appropriate action based on the likelihood of positive outcomes, and this affects their ability to perform all of the tasks required to carry out decisions appropriately. For example, students with autism often have difficulty with task completion, or sometimes do the work but forget to turn the work in. When lockers or binders are searched, missing work is often found.

**Accommodating Students with Autism**

Due to the characteristics described above, several issues need to be attended to when planning an instructional program for students with autism. Issues related to communication are a primary concern. Expressive and receptive impairments in both verbal and non-verbal communication interactions have a significant negative impact on the student’s ability to process information quickly and efficiently in educational or social settings. These are exacerbated by difficulties with executive functioning. To help the student with autism deal effectively with their receptive communication issues and instructional situations, educators should present information in clear, specific language and, when possible, provide directions in writing to assist the student with processing and comprehension. Language should be as concrete as possible, and figurative language such as idioms and metaphors should be reduced. The communication deficits inherent with autism also make expressive communication difficult, potentially making effective communication with peers or adults quite challenging. Sometimes students with autism give the impression they understand instruction, when in fact they are not able to comprehend. Allow and encourage the student to restate the expectations and ask clarifying questions before she/he begins instructional tasks.

To accommodate verbal communication deficits, visual supports can be used. Visual processing, is frequently, quite good in children with autism, and often they rely heavily on visual information to make sense of environmental expectations. Proactively providing visual supports allows the student to experience a more predictable learning and social environment, thus reducing the likelihood of misunderstanding or a behavioral response.
Students with autism have great difficulty independently transferring and generalizing knowledge and information from one setting to the next. Effective instructional programs for individuals on the autism spectrum need to address these difficulties by providing concrete linkages between topics or behaviors, from one instructional situation to the next. To make matters worse, once a routine is established or preferences are solidified, students with autism often have difficulty moving into arenas where they are unsure of expectations or settings. This can become very stressful and may result in behavioral outbursts on the part of the student. Teachers can help mitigate this response and reduce the stress on the student by visually and proactively providing scripts, schedules, task lists, or rules to the student, allowing her/him to recognize what features in the setting need to be attended to in order to be successful.

Lastly, students with autism will sometimes focus on irrelevant aspects of an activity rather than the important points, making the design of instructional programs very challenging for teachers. Instruction works best when the teacher isolates or highlights key points of what is being taught in order to ensure that students are focusing on and learning the intended lesson objectives.

**Students with Autism in Online and Blended Environments**

In order to assist students in online and blended learning environments, the teacher should have a good understanding of the capabilities and limitations the student with autism brings to the learning environment. This includes having an understanding of the characteristics and needs for accommodations listed above. Certainly providing visual supports to students with autism and letting them know about schedules, changes in expectations, requirements and expectations for assignments, and timelines for completion will assist the students with their executive functioning difficulties.

**Support Language and Communication Needs**

Students with autism often have issues with spoken and written language, expressive and receptive. In addition, these students might also exhibit trouble understanding the nuance of social language expressed during exchanges with their peers or the instructor. Spending time outside of the instructional period with the student with autism to define language used in the learning management system and discussing the meaning and intention of their peers’ writings or statements via interactions online might be necessary to help the student with autism fully comprehend the intent behind verbal and written interactions. In addition, since many people with autism are precise in their understanding and production of language and communication, it might be necessary to ask clarifying questions when the comments made, or work produced by the student with autism seems off track, offensive, or inappropriate.

**Alternative strategies**

Allowing students to demonstrate competence or meet criterion through the incorporation of alternative methods allows the students to use learned skills and abilities and focus more exclusively on the content at hand. This assists with the transfer and generalization of academic content, without a need to expend cognitive load on the formatting of material to meet instructional expectations.
**Rubrics**
Rubrics for alternative assignments for students with autism should be clear, specific, and in writing; and they should be discussed proactively before work begins. The rubrics provide a standardized way to conduct formative and summative assessments and provide the student with the “rules” of the instructional expectations.

**Peer support**
Allowing students to consistently work with peers that know and understand the student with autism and the strengths and limitations the student brings to the learning environment provides the pragmatic support instructors often lack when presenting information or when assignments are presented.

**Submitting work**
The instructor should establish a system and routine with the student with autism for the submission of completed work. Offering cloud based storage systems where the instructor has shared access to work in progress is a way for the student with autism to submit the work without actually having to turn it in.

**Follow-up**
Students with autism might have difficulty advocating for themselves when they do not understand. They also may become very confident of their positions even when they are incorrect so frequent checks for understanding may be necessary to ensure the student is accurate. Opportunities for responding to questions through discussion boards might assist the student who has problems in dealing with verbal processing.

**Maintaining engagement**
Recognize that students with autism might experience a loss of focus during instruction when content is difficult or when something else catches their attention. Providing short segments of verbal instruction intermixed with visuals and providing a bulleted synopsis of content at the end of the lesson allows the student to have multiple opportunities to attend to the content. Asking the student to verbally rephrase key elements, combined with a request for their insights, is another way to help increase the active engagement of students with autism.
Serving Students with Intellectual Disabilities

Understanding Students with Intellectual Disabilities

According to the IDEA (2004), students with an intellectual disability exhibit “significantly subaverage general intellectual functioning, existing concurrently [at the same time] with deficits in adaptive behavior and manifested during the developmental period, that adversely affects a child’s educational performance” (NICHCY, 2012, p. 3). For an intellectual disability to exist, the student must have a score on a standardized intelligence test of 70 or below, in addition to having difficulties dealing with issues involved in self-sufficiency in daily life roles.

The majority of students recognized as having an intellectual disability have an IQ (intelligence quotient) score of 50 – 70. The intellectual limitations these students experience have a negative impact on their ability to remember facts, retain and recall learned behaviors, and transfer and generalize learned tasks and skills from one environment to the next. Adaptive behavior deficits can take the form of difficulties with concepts, problems with self-care skills, issues with making choices, self-determination, problem solving, and social skills (Project IDEAL, n.d.).

Students with intellectual disabilities will always have a deficit when compared to peers in both intellectual and academic performance. However, with appropriate supports and accommodations, students with intellectual disabilities can increase their skills and performance in school related tasks.

Accommodating Students with Intellectual Disabilities

Teachers can support individuals with intellectual disabilities by recognizing the achievement gap that exists between the student and their peers. Students with intellectual disabilities learn and acquire new skills and concepts at a much slower pace than their peers. Through a very specific task analysis, combined with careful attention to instructional design, students with intellectual disabilities can have fruitful learning experiences in general education settings. To accommodate the needs of students with intellectual disabilities, teachers can attend to the specific goals and objectives that need to be met for criterion to occur and may choose to limit expectations to only the core curriculum goals and objectives, at their appropriate level of difficulty, to increase the opportunity for the student to meet academic requirements.

Even with this attention to holding students accountable to a refined curriculum, teachers need to always be aware of the level of understanding the student has acquired. The depth, breadth, and quality of materials learned by students with an intellectual disability is probably considerably less than that of their peers. Teaching one task or skill component at a time and slowly expanding the concepts that are presented, once understanding is demonstrated, assists the student in acquiring new skills.

Teaching students with intellectual disabilities the curricular vocabulary using a concrete foundation, based upon their experience, allows students the ability to apply past understanding to current intellectual demands. Breaking down larger units of instruction into smaller component parts allows students to cognitively manipulate pieces of information. Providing students with the
opportunity to then put these smaller pieces of understanding together in larger forms allows them to demonstrate their competency with the task (Project IDEAL, n.d.).

Encouraging students to work with peers through cooperative learning exercises allows the student with intellectual disabilities to use a peer model to help guide them through the problem solving sequences involved in the task. Peers can also provide cognitive coaching when the student with disabilities needs extra reinforcement or targeted instruction on a task. Finally, peer mediated learning opportunities allow students with intellectual disabilities to partially participate when tasks get more cognitively challenging or intricate: they are able to focus on and complete the parts of the task in which they have competency, thus continuing to be an active and valued member of the learning community.

**Students with Intellectual Disabilities in Online and Blended Environments**

Students with intellectual disabilities will require extra supports from instructors in online and blended environments.

**Technology**

Not only will the student need to learn to master the instructional content, they will probably need supports accessing, understanding, and manipulating the technologies available for the online components of the instruction. The instructor will need to build in multiple opportunities for the student with intellectual disabilities to acquire and demonstrate competency with the technological aspects of the instruction prior to the presentation of any course content. Having a support system identified for technological trouble shooting with practice sessions built in so the student with intellectual disabilities can feel comfortable with the technology is essential for a successful integration of online and blended environments into the student’s program.

**Strategies**

The teacher should take the opportunity to incorporate visuals that fully demonstrate the concepts being taught whenever possible. Providing multiple scenarios where the task is demonstrated, with the different environments where criterion is expected, provides the scaffolding that is important for the transfer and generalization of skills across environments.

**Peer and other support**

Allowing – perhaps requiring – students to work synchronously with teachers and peers during tutorials, work sessions, or office hours allows instructional supports to be embedded that provide multiple opportunities for guided practice to occur. Once it becomes evident that independent practice is appropriate, making it possible for the student to complete the task using a recorded session allows for increased assessment, but also allows the student to self-analyze his or her performance after the attempt has been made. This provides an opportunity for metacognition and allows the student to self-modulate his or her performance with the support of the instructor.
Understanding Students Who Are Deaf or Hard of Hearing

According to the IDEA (2004), students with deafness are said to have “a hearing impairment so severe that a child is impaired in processing linguistic information through hearing, with or without amplification, that adversely affects a child’s educational performance” (NICHCY, 2012, p.3). IDEA defines hearing impairment as “an impairment in hearing, whether permanent or fluctuating, that adversely affects a child’s educational performance but is not included under the definition of deafness” (NICHCY, 2012, p.3). Within the Deaf community and the field of education for the deaf and hard of hearing, the preferred terms are “Deaf” to refer to someone who is a member of the culturally Deaf community, “deaf” to refer to the condition of deafness, and “hard of hearing” to refer to those with a hearing impairment. The use of the term “impairment,” while the legal term, is not considered politically, culturally, or socially correct.

Working with students who are deaf or hard of hearing (HoH) includes a broad range of individuals. Deaf people have severe to profound hearing loss and commonly rely on the use of American Sign Language (ASL), while HoH people have a partial hearing loss and may use ASL and/or speech to hear and read lips. Deaf and HoH students tend to lag behind their hearing peers in reading and language development due to a lack of incidental learning. In the United States, 90 to 95 percent of Deaf or HoH children are born to hearing parents. Typically, these children experience a delay in language acquisition during their early years, having a negative impact on their language development (Mitchell & Karchmer, 2004).

Additionally, for Deaf students whose primary language is ASL, their understanding and application of grammar and syntax are affected. ASL grammar differs considerably from English grammar, resulting in misunderstanding, confusion, and grammatical errors in Deaf students’ writing. This deficiency includes casual written communications, such as emails. One example: “I washed my car last week” would translate in ASL as “Car my? Week-past finish wash.”

Accommodating Students Who Are Deaf or Hard of Hearing

Students who are Deaf or HoH require accommodations to facilitate communication and help them be successful in a traditional, mainstream educational setting. For a Deaf student who relies on sign language, a qualified sign language interpreter is critical. The interpreter enables the student to benefit more fully from classroom instruction and participate in lectures, discussions, and group projects. Both Deaf and HoH students benefit from having a note taker. It is difficult for a student to watch an interpreter and/or read the teacher’s lips while simultaneously trying to take notes. A note taker enables the student to fully engage in the lecture, reviewing the notes when convenient. Additionally, providing notes or study guides in advance of lessons or lectures is extremely valuable to Deaf and HoH students. This could be as simple as emailing or printing out a copy of PowerPoint lecture slides.Supplying notes in advance helps students to review and ensures they do not miss information from the interpreter and/or the note taker during the lecture. Since Deaf and HoH students are primarily visual learners, the availability of extra visual aids helps them to be more successful in their courses.
Audio-recording lessons is another accommodation that may benefit both Deaf and HoH students. Transcribing the lesson for Deaf students provides a more complete message. Students who must rely on interpreters and note takers may still experience difficulty or feel that notes may be missing content, so providing a transcript helps to prevent any potential gaps. HoH students may replay parts of the audio-recorded lesson that were unclear and fill in their notes accordingly.

Additional time on tests is another accommodation that many Deaf or HoH students require due to their reading and language deficiencies. Deaf and HoH students typically need 150% to 200% of the set amount of time to take the test. For example, if a test has a time limit of 60 minutes, that time would need to be extended to 90-120 minutes for a Deaf or HoH student.

For face-to-face and blended courses, it is critical that Deaf and HoH students be given preferential seating. Both Deaf and HoH students need to see the interpreter and/or the teacher, so the option to sit at the front of the classroom or in a well-lit area is an important consideration for the student.

**Students Who Are Deaf or Hard of Hearing in Online and Blended Environments**

The most important aspect for virtual school educators to understand about Deaf and HoH students is that they can be successful in a traditional, blended, or online setting. These students will need accommodations regardless of the setting; however, the accommodations may vary from one setting to another. Deaf and HoH students, in general, will require more time and effort to complete assignments and tests due to delays in reading and language development. Most importantly, Deaf and HoH students need clear, concise, and open communication to be successful in any educational setting.

For both Deaf and HoH students, there are some additional accommodations that may be necessary to aid them in being successful in an online or blended educational setting.

**Visual language**

Closed captioning for videos or recorded tutoring sessions is essential for both Deaf and HoH students. Often, transcripts are provided, but it is extremely difficult for most students to read a transcript and follow a video at the same time. Automated captioning, such as what YouTube provides, is unreliable, often providing an incomplete or incorrect message. This leaves the viewer unable to understand the content of the video being presented.

**Communication**

When communicating via telephone with Deaf or HoH students, some type of video conferencing will most likely be needed. Deaf students often need to use a video relay service (VRS) such as a state-sponsored relay service or other providers such as Sorenson and Purple. This is a service where a hearing person talks to an interpreter who signs the conversation to the Deaf student. The student then signs to the interpreter who voices for the student. This mode of communication is much easier and reliable than communicating via text and leaves less room for miscommunication. Students who prefer to use video relay services can provide a direct telephone number for contacting them that will route through the relay service. For HoH students who would prefer to speak to teachers directly but cannot hear well enough to use the telephone, they may want to
Skype, use FaceTime, or other videoconferencing programs in which both parties can see and hear each other.

**Group discussions**
Live online group discussions or group projects are other areas where accommodations should be considered. A signing Deaf student would require an interpreter to participate in synchronous group discussions. It is also important to note that everyone involved needs to take turns when talking, as the interpreter is only able to interpret for one person at a time.
Serving Students Who Are Blind or Visually Impaired

Understanding Students Who Are Blind or Visually Impaired

According to the IDEA (2004), students with visual impairment, including blindness, have “an impairment in vision that, even with correction, adversely affects a child’s educational performance” (NICHCY, 2012, p.4). This term includes the range of partial sightedness to blindness. Students with any variant of a visual disability experience some type of deficit in the acquisition of visual information. They acquire visual content in a part-to-whole fashion, while their sighted peers acquire the same information in a whole-to-part manner. This can create deficits in seeing things holistically. They also must learn visually presented content using other senses or supplemented by other senses. Another common characteristic of students with a visual disability is the lack of incidental learning (visually receiving information from your environment, such as the comparative size of a giraffe) that occurs, especially with students who have significant vision loss. According to the College of Optometrists in Vision Development, 80% of what children learn comes through their visual processing of information (College of Optometrists in Vision Development, n.d.). This becomes an even greater factor if a child is blind from birth (congenital) as opposed to becoming visually impaired at a later time (adventitious).

Accommodating Students Who Are Blind or Visually Impaired

When considering accommodations for blind and visually impaired students, it is best to look at common interventions and accommodations by distinguishing between the needs of students with low vision and students who are blind with an understanding that some students may use a combination of accommodations.

Students with low vision

Students with low vision often need some sort of magnification, font enlargement, and contrast selections. Some magnification and visual enhancement features are built into operating systems and function sufficiently for the students with mild vision loss. Windows computers use Magnifier and High Contrast themes; both can be found in the Ease of Access Center. Zoom and Contrast are options for Mac computers and can be found in the Universal Access panel of the System Preferences. Chromebooks also offer a Screen Magnifier and High Contrast mode within their operating system. iOS devices have two ways to magnify the screen. The first is pinch to zoom, which will work in most areas but does not magnify the home screen, menus, and some websites. The second is Zoom, which is enabled in the Accessibility Settings and offers magnification up to 15x. Along with magnification, iOS devices also give many choices for text and contrast enhancements. On most Android devices, Touch Zoom and high contrast text can be enabled in the Accessibility Settings.

Other students with a more significant vision loss require more specialized software with options not available within the device’s operating system. Three of the most commonly used programs are MAGic by Freedom Scientific, ZoomText by Ai Squared, and SuperNova by Dolphin. Each program offers more fine-tuned magnification, cursor and pointer options, color enhancements, and screen reading for text selections.
**Students who are blind or functionally blind**

To access digital content, students who are totally blind, or have a very significant vision loss, often use a screen reader. Screen readers employ speech synthesizers and various command structures to read what is displayed on the screen. Most personal computers and mobile devices have some sort of screen reading technology built into the operating system. For example, Windows platforms use Narrator, and Apple uses Voiceover. However, some tasks require a robust program. Some of the more commonly used screen readers for the Windows platform are JAWS (Job Access with Speech), NVDA (NonVisual Desktop Access), and Window-Eyes. Many students also use a refreshable braille display, a piece of hardware that has small pins that pop up and down to display braille characters. Braille displays allow the student to read the digital content, navigate the screen, and edit content with less difficulty.

**Students Who Are Blind or Visually Impaired in Online and Blended Environments**

The demands of an online or blended environment have been a challenge for students who are blind or visually impaired. They must acquire visually presented information using adaptive techniques and methods.

**Design**

Accessing online and blended learning environments does present challenges to the blind and visually impaired student. More challenges exist for students who rely on a screen reader to access digital content. Online learning platforms vary in the amount of accessible content, and special care should be made in choosing the right environment. With the right accommodations and proper coding and design of the online program, students who are blind or visually impaired can have access. Some considerations for the design of an online environment may include:

- Ensure that the design is consistent throughout
- Reduce visual clutter or graphics without a purpose
- Increase contrast – stay away from using low contrast colors in layers
- Provide descriptive alt text (tags) to any graphics. (For information regarding the proper use of Alternative Text read the WebAIM Guide at [http://webaim.org/techniques/alttext/](http://webaim.org/techniques/alttext/))
- Label links on a page clearly
- Reduce the amount of Frames on a page (a section of a web page where content is displayed independent of the container). Frames are often difficult to navigate with a screen reader.
- State the intent of the “pull-down” clearly and specify what the user is directed to select when using Forms.
- Use proper Heading Structure. This will allow for easier navigation with a screen reader.
- Stay away from tasks and chat features that require matching, if possible. These can present problems for some screen readers.

**Linear learning**

Virtual school educators should be cognizant of the fact that students with vision loss interact with the content in a linear fashion. They receive information presented on the screen in parts. Students
with normal vision see the content holistically, and it is much easier to understand how each part of the screen and content fits together.

**Pace**
Regardless of whether a student uses a screen reader or magnification software, it will take them a greater amount of time to access content in an online environment. This is true for not only accessing the content but for completing assigned tasks as well.

**Communication**
Finally, initiating and maintaining open communication with the student who is blind or visually impaired about their needs and struggles within the environment is essential.
Serving Students with Other Health Impairments

**Understanding Students with Other Health Impairments**

According to the IDEA (2004), students with Other Health Impairment (OHI) are said to “have limited strength, vitality, or alertness, including a heightened alertness to environmental stimuli, that results in limited alertness with respect to the educational environment that, (a) is due to chronic or acute health problems such as asthma, attention deficit disorder or attention deficit hyperactivity disorder, diabetes, epilepsy, a heart condition, hemophilia, lead poisoning, leukemia, nephritis, rheumatic fever, sickle cell anemia, and Tourette syndrome; and (b) adversely affects a child’s educational performance” [§300.8(c)(9)].

While this definition does reference specific health conditions, the deliberate use of the words “such as” provides for wide and encompassing application and inclusion. According to the National Center for Educational Statistics (NCES) individuals categorized as OHI composed 12% of the 2012-2013 child population making OHI the third most prevalent categorization served by the IDEA (United States Department of Education, 2016). According to the Centers for Disease Control, children categorized as OHI have high rates of absence and high rates for repeating at least one grade and may be taking medications that have side effects that can impact school performance (NSHC, 2011). Students with OHI may have physical and cognitive limitations. Frequent diagnoses associated with OHI include seizure disorders (e.g. epilepsy), cancer, asthma and mental and behavioral health disorders (e.g. depression, bipolar disorder) (Wodrich & Spencer, 2007). A condition may be chronic, that is, one that is always present or recurrent, for example, asthma, cerebral palsy, or diabetes; or the conditions may be acute, characterized by sudden and severe onset but only lasting for a short period of time, such as a broken bone or mononucleosis.

**Accommodating Students Who Are Other Health Impaired**

Among students with OHI, accommodations will inevitably be individualized due to the category’s broad and multi-faceted nature. Accommodation may best be preceded by obtaining an understanding of the nature and severity of a student’s diagnosis. Familiarization with the student’s IEP is an important first step coupled with discussion with parents/guardians and the student. Research and understanding related to a student’s diagnoses represents another important step. The Centers for Disease Control and Prevention (www.cdc.gov/diseasesConditions/az/o.html) provides a comprehensive indexed list of diseases and conditions.

Similar to accommodations for students associated with other IDEA categories of disability, simplifying directions, providing alternative methods for competency demonstration, developing objective rubrics for assignments, frequent formative assessment, and frequent scheduled check-ins with both the student and parent/guardian can facilitate student success. These regular check-ins should include a discussion of students’ health status and wellness. Teachers should expect that accommodations may need to be adjusted based upon the student’s health.

Since the health and impact of health impairments will vary from student to student, the following questions can assist teachers, administrators, and support personnel in the identification and better understanding of students:
1. Does the student have an existing IEP or 403 plan?
2. Does the student have a current health problem or history of health problems? If so, what is this health problem?
3. Does the student have limited strength, energy, or attentiveness?
   a. If so, does the student’s limited strength, energy, or attentiveness affect his or her ability to succeed in the educational environment?
   b. If not, does he or she have heightened reactions to general environmental stimuli?
4. Does the child’s heightened alertness to the surrounding environment limit his or her alertness to the educational environment?
   a. If so, is the limited or heightened alertness due to a chronic or acute health problem?
   b. If so, how is the student’s educational performance affected by the limited alertness?
5. Finally, does the disability create a need for special education services?

**Students with Other Health Impairment in Blended and Online Environments**

Research by Basham et al. (2015), Repetto et al. (2010), Black (2009), and Thompson et al. (2012) provides evidence that virtual school students with OHI may be more affluent than the average traditional student, experience high levels of parental social support, and have more than one diagnosis (e.g. cystic fibrosis and attention deficit disorder). While the field still lacks a comprehensive epidemiological understanding of the prevalence, scope, and morbidity associated with OHI K-12 online students, research indicates that while students with disabilities are increasingly choosing to participate in virtual learning, many virtual instructors, course designers and administrators are ill-prepared to address their needs (Basham et al., 2015; Burdette, Greer & Woods, 2013; Repetto, Cavanaugh, Wayer & Liu, 2010; Thompson, Ferdig & Black, 2012; Cavanaugh et al., 2011).

Students who have been diagnosed with an OHI represent a diverse body of individuals. A student’s disability may or may not affect the participation of a student in your class and no two students with similar disabilities are alike. Unfortunately, there is a dearth of research to provide insight into how best to serve students in online and blended environments (Rice & Carter, 2016). Several emergent strategies include the encouragement of self-advocacy and self-direction, which are not mutually exclusive. Test et al. (2005) describe self-advocacy and self-regulation as key attributes for future success among those living with OHI. Self-advocacy is defined as the processes that a person with a disability engages in to demand effective supports. These processes typically involve knowledge of self, knowledge of rights, communication, and leadership. Self-regulated learning includes self-directive processes and internally held beliefs that learners may employ to transform cognitive abilities into academic ability (Zimmerman, 2008).

Effective strategies for instruction and accommodation of students should involve opportunities for students to practice self-advocacy and self-regulation (Rice & Carter, 2016; Roberts, Ju & Zhang, 2016), while at the same time assessing the students’ wellness for engaging in educational activities, taking into account comorbidities (the co-occurrence of one or more illnesses or diseases) and planning for the future. Planning for the future may include preparations for future
hospitalization, anticipating future accommodation and effectively communicating these needs to other teachers and administration and liaising with family and health care providers.

Rice and Carter (2016) describe several strategies teachers may employ to manage methods for creating authentic relationships. These include using planning resources, for example, encouraging the use of pacing support for students, advising students and parents about instructional policies early and often, and maintaining and documenting communication with students and parents. In addition to these strategies, many students categorized as OHI will benefit from attention to the following instructional concepts, which may also assist students and teachers in the development of self-regulation and self-advocacy.

**Understanding**

Effective instruction begins with an understanding of the student, their academic and cognitive strengths and challenges, and an understanding of their illness and the possibility of emergent or scheduled medical interventions. Armed with this understanding, it may be appropriate to explore prior sections of this report to plan appropriately for student success. For example, a child with an intellectual disability who also has been diagnosed with sickle cell disease could be aided by considerations provided in the previous section, “Serving Students with Intellectual Disabilities”. In addition, teachers should take a few minutes to educate themselves about the disease, understanding that individuals with sickle cell disease, a chronic illness for which there is no cure, may experience sudden extreme episodes of pain that occur without warning and often require hospitalization and that individuals with sickle cell disease often experience fatigue and decreased energy.

**Adaptive materials**

Hospitalization is a common occurrence for many students categorized as OHI. For some students these hospitalizations may be scheduled in advance; others may experience them unexpectedly. OHI’s breadth and individualized nature makes prediction and anticipation of health related issues a difficult task. Having learning materials organized for adaptation to a hospital environment where collaboration with peers may be hindered, access to technology limited, or time sensitive assignments impractical are considerations that potentially can be mitigated with planning.

**Relationships**

An instructional philosophy emphasizing caring and nurturing can also aid in student success and translate to a supportive learning community. Borup et al (2013) assert that modeling effective interactions for students, monitoring all students’ behaviors and developing relationships that at a minimum focus on students’ basic needs are a critical component of the online instructor’s role. These behaviors serve as the foundation for 10 methods for creating authentic relationships between online teachers and students with OHI:

1. Respect student privacy (allow the student to choose how and whether to disclose disability),
2. Assess and work to disregard personal preconceptions and biases related to students with disabilities,
3. Provide timely feedback,
4. Monitor student understanding,
5. Monitor student online classroom behaviors,
6. Provide positive feedback,
7. Provide opportunities for content or assignment adaptation,
8. Check-in with students frequently (regardless of performance),
9. Provide multiple methods for instructor-student communication (e.g. text, telephone, email, chat, video), and
10. Attend to student and parent/guardian questions and concerns in a timely manner.

Students with OHI represent a broad and potentially complex group of students. The recommendations provided in this section are not fundamentally different from the deliberate practices that many experienced and successful K-12 online instructors incorporate with students regardless of ability (Ferdig, Cavanaugh, DiPietro, Black & Dawson, 2010; Cavanaugh, Barbour & Clark, 2009; DiPietro, Ferdig, Black & Preston, 2008).
Making Your Online or Blended Course Accessible

Every student learns and engages with course materials differently, especially students with disabilities. How a disability affects a student’s learning varies by individual. However, there are some common things to consider in presenting accessible course content online that may be provided for students with disabilities and improve usability for all students. The World Wide Web Consortium (W3C) has developed Web Content Accessibility Guidelines (WCAG). More information about the Web Accessibility Initiative can be found at https://www.w3.org/WAI/. The WCAG 2.0 guidelines can be found at https://www.w3.org/TR/WCAG20/.

This section of the guide is meant as a quick reference for those making changes to courses.

Creating Web Content

A learning management system – or LMS – such as Blackboard, Canvas, D2L Brightspace, and others, allows you to create HTML content pages within your course. This is often done with a textbox that includes HTML editing tools, known as a WYSIWYG editor, or “what you see is what you get.” You should NOT copy and paste from Microsoft Word into the text box. Word adds a lot of formatting code that does not appear on the screen but confuses screen readers. If you want to copy and paste text from Word, be sure to change it to plain text first, using software such as TextEdit or Notepad, and then paste it into the HTML editor. You should try to do your formatting using the tools in the LMS HTML editor.

Basic Structure

Headings (H1, H2, H3 ...H6) were developed not to assist style formatting but to provide information on the structural hierarchy of a document. Use H1 for the page title, H2 for major headings, and H3 for major sub headings. Visual readers are able to identify headings by scanning where blind users rely on a screen reader to navigate the document with the semantically "tagged" headings. Use lists for the purpose for which they are intended. Numbered/ordered lists convey sequence and bulleted/unordered lists can be reordered and not change the meaning of the listed items.

Images

When inserting images into your course, be sure to include an “alt tag,” or alternative description, that describes the image. Alt tag descriptions help students using screen reader software know what is displayed on the screen. There is usually a space for you to add this when you are uploading the image. Make sure your alt tag clearly describes what is in the image, such as “photo of a group of young children playing in a dusty street with a soccer ball” or “portrait of George Washington standing in a boat, surrounded by other soldiers holding up a flag as they cross the Delaware river” as opposed to “image” or “children.”

Video

All video material should be captioned and include the video’s description or descriptive transcripts. Captioning benefits many different learners including those who are Deaf or HoH, those with cognitive or specific learning disabilities, and English Language Learners.
Audio
You should always provide transcripts of audio files such as podcasts.

Flash
Multimedia content presented in Flash is most often NOT accessible or usable across platforms. It is also not usable on many mobile devices, especially iPads. Content created with Flash is not permitted. HTML5 is a good alternative to Flash.

Colors
Students with cognitive or visual disabilities and others without disabilities may have difficulty reading text that is against a patterned/colored background. Provide good color contrast; black text on a white or light background is the most readable. Do not use color alone to convey meaning or emphasis as some students may not be able to see them.

Fonts
Keep use of fonts in materials consistent. Sans serif fonts such as Arial or Helvetica are easier for many people to read on-screen.

PowerPoint
Microsoft PowerPoint is perhaps the most popular tool for creating slideshow presentations or online lectures. However, it was designed as a presentation tool for face-to-face presentations, not a tool for developing multimedia web content; thus, PowerPoint files present accessibility problems. If you feel that PowerPoint is essential to your course, look at these WebAIM PowerPoint Accessibility tips (http://webaim.org/techniques/powerpoint/).

PDF Files
PDF files are only as accessible as the document they are based on. Be aware that PDF files created as a scan of an original document are actually images and are not accessible to screen reader technology. To be fully compliant, convert a PDF file to HTML, if possible. Tools such as Equidox (https://equidox.co/) can help you translate PDFs to accessible HTML that meets WCAG standards.

Tables
Screen reading software reads tables by going across cells top-to-bottom, left-to-right and keystroke commands. It is essential that tables have consistent even rows and columns. You should avoid:

- Splitting or merging cells that create uneven columns
- Putting bullet points or numbered lists within cells. Lists should be used outside of a table, and often tables are actually lists and do not need to be a table at all.
- Using tables for layout. Tables should really only be used for tabular data. If you are using tables to display data, make sure that table headers are defined for all columns and rows, and a very short summary is provided in the Alt Text description field to identify what the table covers.
Links
Make sure that linked text is descriptive of the target location or site and could point the user to the target. Links should make sense out of context. Avoid using links that say, “click here” or “more.”

Forms
If you have forms for students to download and fill out, make sure they are in an accessible format and clear directions are given for submitting them. Some students may not be able to complete a form that must be filled out in writing.

Navigation
Not everyone can use a mouse. As much as possible, make sure that students can use applications or navigate through pages using a keyboard or assistive navigation device. Keep navigation simple with as few buttons as possible. Avoid activities that require the use of a mouse, such as drag and drop.
References


Access for All: A Guide for Serving Students with Disabilities in Online and Blended Learning Environments


