

## ***Educational Solutions for Children with Cerebral Palsy***

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### ***Abstract***

This paper characterizes educational strengths and needs of children with cerebral palsy (CP) and connects research findings from the University of Michigan's Adapted Cognitive Assessment Lab (ACAL) to current special educational requirements. It acknowledges the uniqueness of educating a child with significant motor and communication disabilities and suggests a reasonable starting point to develop an education plan for children with CP. The authors propose two key components critical to the educational success of children with CP: Accessible Assessment and Accessible Curriculum. Emphasis is placed on the importance of working within the mandated educational guidelines to best meet the individual educational needs of students with CP. Also included in the manuscript is a comprehensive appendix of resources related to the educational needs of children who receive special education services, a resource appendix specific to reading, examples of accommodations vs. modifications, and a diagram that highlights the key concepts of this article.

### ***Educational Solutions for Children with Cerebral Palsy***

Raising a child with cerebral palsy (CP) can be a complex experience for any parent. The diagnosis includes such a broad range of characteristics that even understanding all that it encompasses can be a challenge. Once a parent has acquired a basic understanding of the diagnosis, learning how it will affect their child's life can become a critical goal as well as responsibility. There is a wealth of information available about the different types of CP, the causes, and the potential ways it can affect a child's daily life. With the internet now a primary means to disseminate as well as obtain information, sorting through all of the available resources and finding those that are both effective and applicable to a particular child can be a daunting task.

While there is an increasingly large set of information regarding effective medical treatment and intervention for children with CP, educational needs and interventions are not as well characterized. There are readily available resources mandated in the educational setting for children with disabilities at a state and federal level that are supported by the contents of the child's Individualized Education Plan (IEP) (IDEA, 2004). However, appropriate services and supports, including cognitive and educational testing, are not always identified in the child's IEP.

There are specific accommodations and interventions for children who receive special education services under categories such as autistic impaired (AI), specific learning disability (SLD), and otherwise health impaired (OHI) under the auspices of Individuals with Disabilities Education Act (IDEA, 2004). However, CP is not a special education category; therefore, development of an appropriate education plan can be a significant challenge. Although CP is a condition distinguished primarily by its physical impairments stemming from early brain damage, there also are risks for learning difficulties associated with the underlying brain atypicalities. Children with CP may also have other types of impairments and conditions including speech difficulties, sensory impairments (e.g., vision difficulties), seizure disorders, pain and fatigue that can have significant effects on their ability to learn and succeed in the traditional academic setting. For this reason, appropriate educational services and supports are critical in promoting quality of life and independence for these children (see Appendix A).

Physical impairments affecting speech and motor abilities in children with CP make it difficult to assess cognition using traditional methods of testing. In order to measure cognitive capabilities independent from physical and communicative impairments, researchers at the University of Michigan's Adapted Cognitive Assessment Laboratory (ACAL) are conducting research that focuses on alternative testing methods through the use of assistive technology (AT) for children whose abilities could not be determined accurately through traditional standardized cognitive testing (Adapted Cognitive Assessment Laboratory).

In addition to conducting adapted assessments, the ACAL researchers have interviewed many families of children with CP over the course of several years and have actively participated in the IEP process by translating assessment findings into functional applications within the classroom and in the IEP document. Over the course of this research, the lab has been able to characterize specific educational needs for children with CP.

Although many children with CP receive their education under the auspices of IDEA and the IEP, the IEP document may not always contain relevant data. For example, failure to address any one of the three key components of the student's IEP (present level of academic achievement and educational performance, measurable goals and objectives, and statement of needed special education and other support and services) will undermine the requirements of a Free and Appropriate Public Education (FAPE) for a student with any type of disability, as this is the primary purpose of IDEA (U.S. Department of Education). Therefore, these students may not be challenged to meet their fullest potential in school and within their community. This article describes two key components that may help to characterize and address more fully the educational strengths and needs of children with CP: 1) accessible assessment; and 2) accessible curriculum. Appropriately adapted accessible assessments can provide students with access to the proper curriculum, as stated in IDEA (Karger & Hitchcock, 2003).

### *Accessible Assessment*

The importance of reliable and valid assessment in determining the most appropriate curriculum for a child with any sort of disability cannot be overstated. For children with CP, this can be particularly challenging, as motor impairments may affect both ability to speak as well as ability to access standard assessment instruments. In order to provide appropriate education to students with speech and/or motor impairments, we must first find a reliable and valid means of measuring their cognitive abilities as well as their current level of academic functioning.

A common understanding among researchers and educators is that formal and informal measures of intellectual functioning and academic achievement are heavily based on language abilities. For children who cannot talk, these measures can underestimate levels of cognitive functioning, and result in inappropriate educational placement and instructional levels (Sabbadini et al, 2001). In addition, the findings can result in reduced expectations regarding a child's learning potential, which in turn, can have long-term negative effects on the development of optimal levels of independence. To address this need, the ACAL research team has developed adapted assessment procedures that can provide reliable and valid measurement of cognitive abilities in children with severe speech and motor impairments.

One ACAL study examined the feasibility of modifying tests of thinking skills and knowledge to accommodate the needs of children with disabilities (Warschusky et al, in revision). Specifically the research investigated the reliability and validity of computerized adaptations of common cognitive and academic tests with accessible responses via assistive technology. These tests are similar to the types of instruments utilized in a regular school setting or in a neuropsychological assessment clinic. These computerized adaptations enable children to use alternative access for responding, such as use of single switch scanning, or direct selection via head movement using a HeadMouse<sup>®</sup>. A Headmouse<sup>®</sup> enables a child to move the cursor using head movement via infrared technology, and to select a desired item by holding the cursor on it for a specified duration (e.g., 1.5 seconds). These adaptations allowed the researchers to minimize the motor demands that could potentially interfere with a child's ability to respond accurately. In addition to studying reliability and validity of these adapted instruments, the ACAL team has also used findings to better inform the IEP process. Members of this research team attend IEP meetings and describe a student's test results, helping to translate these results into appropriate adaptations in curriculum and environment.

In addition to having severe motor and speech impairments, children with CP are at risk for cognitive impairments. Two important areas of cognition identified by our research team as presenting unique challenges in children with CP are cognitive processing speed (thinking speed) and phonemic awareness. Previous research suggests that children with CP are at risk for slowed processing speed, but all of the processing speed tests used in previous research have also required the ability to make quick movements (Ito et al, 1996). Specifically, most traditional tests of processing speed require quick hand movements or rapid speech, such as quickly copying symbols or saying words. For children with CP, this becomes a confounding factor as their motor impairments interfere with their ability to respond as quickly as they are able to process information. The ACAL team is in the process of investigating processing speed independent of response speed.

In studies of the typical development of literacy, phonemic awareness is generally recognized as the strongest predictor of literacy outcome. The development of phonemic awareness skills in children with CP has become a growing area of interest. Some research has found that children with CP perform below their typically developing peers on measures of phonological awareness (Peeters et al, 2008). Nonverbal reasoning and speech abilities were the most important predictors of phonemic awareness for children with CP. However, the association between speech and phonemic awareness in children with CP is not a consistent finding in the literature (Dahlgren Sandberg & Helmquist 1996; Dahlgren & Sandberg, 2006). Although phonemic awareness develops in children without productive speech, it has not previously been shown to have the expected positive influence on literacy development (Sandberg, 1998). Recently, the ACAL examined phonemic awareness as a predictor of reading comprehension in children with CP and found that the same variables predict reading comprehension in children with cerebral palsy as in typically developing children, but that children with cerebral palsy continued to rely on phonological processing later in development (Asbell et al, in press). Productive speech had an indirect effect on reading comprehension that was mediated by phonemic awareness. Specifically, for children with CP the significant association between dysarthria and reading comprehension is mediated by phonemic awareness. There is a paucity of measures of phonemic awareness available to children who are not oral communicators. The ACAL has piloted forced-choice pictorial format instrumentation with psychometric work up still in progress.

Ideally, adapted cognitive assessment will assist in the process of determining a child's current level of functioning as well as in identifying learning needs. The next challenge becomes how to translate these findings into classroom instruction techniques.

### *Accessible Curriculum*

An accessible assessment is a good first step in guaranteeing that children with CP and associated speech and motor impairments receive an appropriate education. Once current levels of academic achievement, cognitive, and learning abilities have been determined, we must find ways to make the curriculum accessible. The combination of accessible assessments and accessible curricula can significantly increase the potential for further education, employment and independent living when planning for and developing transition goals as indicated in IDEA (NICHCY).

All children who have CP-associated impairments that affect learning and participation in school are eligible to receive special education services through IEPs as required by the IDEA. As stated in Sec. 300.320 of IDEA (1), the IEP should contain a statement of the child's Present Level of Academic Achievement and Functional Performance – also known as the PLAAFP. The PLAAFP statement should include information about how the child's disability affects involvement and progress in the general education curriculum (i.e., access to the same curriculum as typically developing students). In theory, the foundations of an IEP should be based upon the PLAAFP, as the purpose of the PLAAFP is to summarize the child's academic achievement, functional performance, and areas of need (Michigan Department of Education).



Once a student’s inability to access the typical curriculum is identified, the optimal solutions for adaptation, including either accommodations or modifications, must be determined.

Accommodations and modifications are types of adaptations that are made to the environment, curriculum, instruction, or assessment practices so that students with disabilities can be successful learners and participate actively with other students in the general education classroom and in school-wide activities (Parent Educational Advocacy Training Center). Although accommodations and modifications both involve adaptations, they differ from each other in fundamental ways.

Accommodations are adjustments made to classroom instruction and testing to ensure that children are able to meet expectations of the general education curriculum. They often are defined in a student’s IEP. Accommodations do not alter or lower the standards or expectations for learning; they simply change *how* a student obtains access to information as well as demonstrates learning. For example, allowing a child additional time to take a test would enable that child to demonstrate learning of the same material in a different way, and as such would be an accommodation. Accommodations may also include adjustments to the testing environment or the use of aids such as page magnifiers or large diameter pens that may allow a student to better demonstrate skills or abilities.

Modifications are changes in the curriculum or instruction that will affect *what* a child learns. Modifications may change instructional level, content, and/or performance criteria. For example, reducing the number of spelling words a child must learn each week is a change in curriculum that affects what the child learns, but still provides the opportunity for classroom participation. Although children with modified curricula are not expected to master the same academic content as others, they are provided the opportunity to participate in a meaningful and productive way in the general education classroom. Table 1 provides some examples of somewhat comparable adaptations that might be made in the classroom, and the headings under which those adaptations would fall.

**Table 1: Examples of Accommodations and Modifications**

Accommodations	Modifications
Test taken orally	Use of calculator on math test
Large print text	Alternative texts on same topic
Additional time for test taking	Questions re-worded using simpler language
Peer support for note taking	Use of symbols versus text
Use of computer for writing	Computerized spell check
Tape record lectures	Outline vs. essay for major project

Access to literacy for students with disabilities has been an area of significant focus recently, both in research as well as in the educational setting (see Appendix B). For young children, accessible literacy learning is particularly important. Factors that affect early literacy planning decisions should include a description of prior attempts at reading instruction and the child's response to that instruction. There also may be need for a critical discussion about whether literacy is an appropriate goal for the child. If not, how best do we present information for optimal learning? There is an increasing research focus on outcomes measurement. As studies examine the effects of assistive technology access on reading acquisition, findings have clear implications for goals that pertain to reading remediation versus compensation. This type of goal-setting then affects planning for the most appropriate curriculum. Few guidelines exist to inform the decision regarding the use of technology in the classroom. How do we determine when a child's goals move from remediation to compensation (Edyburn, 2007)?

In addition to adapting curriculum materials, consideration must also be given to the amount of class time required by students with disabilities to access the adapted curriculum materials. A child with CP who uses an augmentative communication device typically requires significantly longer time to provide a response than does a child who can talk. Accommodating these needs within the classroom can be difficult. One solution might be to adapt core curriculum materials to make them accessible to all children. Materials could be disseminated to school programs with adaptations already created and available to those who need them.

The Center for Applied Special Technology (CAST), a nonprofit research and development organization founded in 1984, has designed an educational approach called Universal Design for Learning (UDL). This approach has 3 primary principles, all designed to expand learning opportunities for all children, especially those with disabilities. These principles incorporate alternative means for acquiring information, demonstrating knowledge, and actively participating in the classroom setting by offering flexible goals, methods, materials, and assessments that accommodate learner differences

Another resource for classroom accommodations for children with special needs is Response to Intervention (RTI), an educational model designed to help insure that all children receive the type of instruction they need to succeed. IDEA 2004 eliminated the requirement that students must demonstrate a severe discrepancy between intellectual ability and achievement in order to be eligible for special education services. RTI was developed as a means of earlier identification for children who are struggling with traditional instruction, and provides an alternative process for schools to design, implement, and evaluate educational interventions.

Addressing physical challenges in the classroom is an important part of developing an accessible curriculum. Issues concerning access to and within the classroom include transition from bus to classroom/classroom to bus, accessible entrances/exits, and a barrier-free environment to allow movement and access to materials. Adjustments and adaptations to the arrangement of the classroom as well as to specific activities may be necessary to provide a child with CP access to the general education classroom and curriculum. The PLAAFP should include information such as accessible aisle widths, desk height, and shelf height to support the notion of access (Doctoroff, 2001).

In addition to mobility and access to school materials, further adaptations may be required for specific activities. For example, children with CP who have speech and motor impairments may require an alternative means to answering questions within the classroom setting. This could range from something as simple as a button switch to activate a light, to sophisticated, interactive augmentative communication devices. Enabling a child to participate in these ways provides an opportunity for inclusion that might otherwise be overlooked.

General classroom activities also can be easily modified for children with motor impairments. For a child who has a physical impairment that affects one arm, holding down a sheet of paper with one hand while writing with the other might not be possible. Low-tech solutions to this type of situation could include a simple piece of tape or paper weight. Having one of the child's peers or an aide help to turn the pages of a book would allow the child to read from hard-copy books and may encourage socialization with peers. As referenced earlier, there are many types of assistive technology solutions for reading, including digital and audio versions of books (NIMAC/NIMAS). While these may seem like obvious or even insignificant adaptations, they are key components of an accessible curriculum. There are also numerous text-to-speech options that are compatible with most computers that enable reading of information available on the internet including various media sources (i.e. newspapers, magazines, etc.).

Social activities and friendships are a fundamental part of childhood, particularly in the school setting. The presence of friends and the ability to interact with peers should be made available to all children, including those who have CP. Children with CP are at risk, however, for social developmental difficulties (Nadeau & Tessier, 2006). For example, children with CP are more likely to experience verbal victimization than their typically-developing peers. Females with CP face increased social challenges as they are perceived by typically-developing peers to have a lower social status. They are more likely to be rejected by female peers, have fewer reciprocated friendships, and exhibit fewer social leadership skills, contributing to social isolation. Social components of education that tend to be overlooked with children with disabilities are the potential adverse effects of specific impairments on conversation and physical activity. A concerted effort should be made to ensure that necessary social adaptations are included in the child's education plan; for example, facilitated lunchtime interaction among typically-developing peers can be implemented by a school social worker, speech-language pathologist, or trained adult volunteer (Kneifel, 2009).

The playground is a major arena for social interactions and building peer relationships. A child with CP may be unable to participate in many traditional childhood games, such as baseball and kickball, due to motor or communication impairments. Despite the fact that children with CP may not be able to participate in the traditional ways, play and games can easily be adapted to incorporate all children. The game of baseball is a good example of a physical activity that can be adapted to foster peer relationships and socialization for all children. Modifications can be made such as using a designated batter and/or runner for a child with physical impairments. This sense of working as a "team within a team" promotes a sense of acceptance. Other roles that the child with CP can assume with appropriate adaptations are those of umpire, coach, team manager, or scorekeeper. At the very least, providing a team jersey and sitting in the dugout are effective ways to allow children with CP to actively participate and feel a part of a team.

The educational implications of a diagnosis of CP, although somewhat complex, need not be viewed as overwhelming or insurmountable. Children with cerebral palsy have the right to a free and appropriate public education, and a multitude of supports are available. There are multiple resources that can be identified and implemented in a broad variety of areas ranging from curriculum adaptations to alternative access to testing. Knowledge of these resources will provide much needed support for decisions related to educational programming and independence for children with CP.

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## Appendix A

The writers of this document do not provide specific educational and/or medical advice and do not endorse any service(s) obtained through information provided in this appendix. The purpose of this appendix is to provide a resource list to parents and/or professionals who serve children with cerebral palsy. Use of these resources does not replace educational or medical consultation with a qualified professional to meet the educational and medical needs of you or others. Because of the nature of the internet information changes rapidly and, therefore, some information may be out of date at the time of access.

### Institutions and Organizations

- **The Adapted Cognitive Assessment Lab (ACAL) at the University of Michigan -**

<http://sitemaker.umich.edu/acal/home>

The ACAL is a research laboratory within the Department of Physical Medicine & Rehabilitation at the University of Michigan. The premise of this lab is to make standardized educational testing assessable to children with communication and motoric disabilities. Investigators in the ACAL conduct tests that separate the measurement of thinking capability from the physical demands of test taking – speaking, pointing, writing - through the use of assistive technology and computers. Families who are interested in enrolling their child to participate in research through the ACAL enroll their child directly on the lab's website or at the University of Michigan's *Engage Registry* at [www.umengage.org/volunteer](http://www.umengage.org/volunteer)

- **The American Speech-Language-Hearing Association (ASHA) -** [www.asha.org](http://www.asha.org)

ASHA is the professional, scientific, and credentialing association for 135,000 members and affiliates who are audiologists, speech-language pathologists and speech, language, and hearing scientists.

- **Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) -** [www.resna.org](http://www.resna.org)

RESNA's mission is to support people with a common interest in technology and disability. Members of RESNA include researchers, clinicians, suppliers, manufacturers, consumers and educators who work in nonprofit and for-profit settings. All members are dedicated to promoting the exchange of ideas and information for the advancement of assistive technology.

- **Michigan's Integrated Technology Supports (MITS) -** [www.cenmi.org/mits/Home.aspx](http://www.cenmi.org/mits/Home.aspx)

The overall purpose of Michigan's Integrated Technology Supports (MITS) is to provide information services, support materials, and technical assistance and training to local and intermediate school districts in Michigan.

- **Michigan Rehabilitation Services (MRS) -** [www.michigan.gov/mdcd/0,1607,7-122-25392---,00.html](http://www.michigan.gov/mdcd/0,1607,7-122-25392---,00.html)

The mission of MRS is to partner with individuals and employers to achieve quality employment outcomes and independence for persons with disabilities.

- **United Cerebral Palsy (UCP) -** UCP - [www.ucp.org](http://www.ucp.org) & UCP Michigan [www.ucpmichigan.org](http://www.ucpmichigan.org)

UCP is the leading source of information on cerebral palsy and is a pivotal advocate for the rights of persons with any disability. As one of the largest health charities in America, the UCP mission

is to advance the independence, productivity and full citizenship of people with disabilities through an affiliate network.

- **My Child Without Limits Support Community**

[www.inspire.com/groups/my-child-without-limits/about](http://www.inspire.com/groups/my-child-without-limits/about)

The My Child Without Limits Support Community connects families, friends and caregivers for support and inspiration. The My Child Without Limits Support Community is sponsored by United Cerebral Palsy in partnership with Inspire.

- **Teen Cerebral Palsy Blog** - [www.teencerebralpalsy.com](http://www.teencerebralpalsy.com)

The goal of this website is to offer a place for teens with cerebral palsy to connect with other teens and share information.

- **Easter Seals (of Michigan)** - [www.easterseals.com](http://www.easterseals.com)

Easter Seals has been helping individuals with disabilities and special needs, and their families, live better lives for nearly 90 years. From child development centers to physical rehabilitation and job training for people with disabilities, Easter Seals offers a variety of services to help people with disabilities address life's challenges and achieve personal goals.

- **Council for Exceptional Children (CEC) – Division for Physical, Health and Multiple Disabilities (DPHMD)** - <http://web.utk.edu/~dphmd>

The Division for Physical, Health and Multiple Disabilities (DPHMD) is the official division of the Council for Exceptional Children (CEC) that advocates for quality education for all individuals with physical disabilities, multiple disabilities, and special health care needs served in schools, hospitals, or home settings.

### **Electronic Text**

- **Net Trekker d.i.** - [mi.learnport.org](http://mi.learnport.org)

Net Trekker d.i. is available to Michigan teachers through Michigan LearnPort. This website contains a database of educational research articles. The website allows the user to search by subject, title, author, language, Michigan's Grade Level Content Expectations (GLCE), reading level and much more. Net Trekker contains teaching resources, lesson plans and reference materials, and has a built in text to speech reader that reads aloud any text document in Net Trekker.

- **Bookshare** – [www.bookshare.org](http://www.bookshare.org)

**Bookshare™ is free for all U.S. students with qualifying disabilities.** Student memberships are currently funded by an award from the U.S. Department of Education Office of Special Education Programs (OSEP).

- **Project Gutenberg** - [www.gutenberg.org](http://www.gutenberg.org)

Project Gutenberg stores electronic versions of books in the public domain from authors such as Shakespeare, Jack London, Lewis Carroll, and Edgar Allen Poe. These e-texts are available in the simplest form making them compatible with 99% of the software used around the world. Simply search for the book you want and click on the link to open a plain text version of the book.

- **The Digital Book Index** - [www.digitalbookindex.org](http://www.digitalbookindex.org)

This site is a portal to other e-text sites, providing links to over 141,000 full-text digital books from commercial and non-commercial publishers, universities, and various private sites. Most of these books, texts, and documents are available free and many others are available at very modest cost.

### [Resources for Locating Electronic Text](#)

- [www.greatschools.org/LD/assistive-technology/electronic-text-valuable-tool-for-students-with-ld.gs?content=988](http://www.greatschools.org/LD/assistive-technology/electronic-text-valuable-tool-for-students-with-ld.gs?content=988)

This website provides resources for students with learning disabilities who may require electronic text. Electronic computer-displayed text can be an important resource for students with learning disabilities (LD), because it can be altered to meet their needs. A child with LD may benefit from changes to the appearance or organization of electronic text.

### [Text-to-Speech](#)

- **ClickSpeak** – <http://clickspeak.clcworld.net/downloads.html>

CLiCk, Speak is a simple, mouse driven program that works with Mozilla's FireFox. Download the CLiCk, Speak add-on and it is added to your FireFox browser as a new tool bar. CLiCk, Speak highlights the text as it speaks. It has several voices to choose from and comes with multilingual support, which can be beneficial for students learning a foreign language who need to hear their foreign language web sites read aloud.

- **Natural Reader for PC** - [www.naturalreaders.com](http://www.naturalreaders.com)

Natural Reader reads text directly from the web and can be used as a desktop TTS reader. NaturalReader reads the text aloud, (no need to copy and paste into new reader document) and can also be used as a full-document reader. It also provides additional support features such as highlighting each word as it is read. NaturalReader's appeal is its ability to convert text into clear, natural sounding voices.

### [Adjusting Text Presentation](#)

- **Vu-Bar 4** - [www.fxc.btinternet.co.uk/assistive.htm](http://www.fxc.btinternet.co.uk/assistive.htm)

Vu-Bar provides the reader with an on-screen, adjustable, slotted ruler. This tool is great for students who often skip lines when reading or need a more focused guide on a text cluttered page.

- **WordFlashReader** - <http://wordflashreader.sourceforge.net>

This is an essential program for readers who have difficulty with visual discrimination, eye control, visual tracking or who find the text on a standard web page too overwhelming. WordFlashReader works by flashing each word, or chunks of words from the text sequentially onto the screen. The background color, font size and color, and text chunk size are fully adjustable.

- **Virtual Magnifier** - <http://magnifier.sourceforge.net>

Virtual Magnifier is perfect for students with low vision. It provides the reader with a magnifying glass that follows mouse movements. Move the lens around the screen to magnify any area of interest. After downloading, Virtual Magnifier installs an icon in your system's tray. This is also a great tool to use to zoom in on a specific part of a document.

### [Assistive Technology \(AT\)](#)

- **[AT and the IEP](#)** - [www.fctd.info/uploads//IEP\\_print.pdf](http://www.fctd.info/uploads//IEP_print.pdf)

The Individuals with Disability Education ACT (IDEA) requires public schools to make available to all eligible children with disabilities a free appropriate public education (FAPE) in the least restrictive environment appropriate to their individual needs. This document explains the correlation between AT and the IEP.

- [AT and the Law](http://www.fctd.info/resources/ATlaws_print.pdf) - [http://www.fctd.info/resources/ATlaws\\_print.pdf](http://www.fctd.info/resources/ATlaws_print.pdf)

This website assists families in understanding how Federal law affects their child's access to AT through brief summaries of laws that affect the provision of assistive technology and special education services.

- [AT 101](http://www.fctd.info/resources/AT101_print.pdf) - [www.fctd.info/resources/AT101\\_print.pdf](http://www.fctd.info/resources/AT101_print.pdf)

This website offers parents and educators basic information about the importance of AT and how with proper assessment the use of AT can support independence.

- [Matching AT Tools with Individual Needs](http://www.greatschools.org/LD/assistive-technology/matching-assistive-technology-tools-to-individual-needs.gs?content=968) - [www.greatschools.org/LD/assistive-technology/matching-assistive-technology-tools-to-individual-needs.gs?content=968](http://www.greatschools.org/LD/assistive-technology/matching-assistive-technology-tools-to-individual-needs.gs?content=968)

This website guides the reader in selecting the appropriate technology for students with learning disabilities through careful analysis of the dynamic interaction between the individual, technology, task, and context.

- [Fact Sheets on Assistive Technology](http://www.fctd.info/resources/index.php) - [www.fctd.info/resources/index.php](http://www.fctd.info/resources/index.php)

The Family Center on Technology and Disability (FCTD) is a resource designed to support organizations and programs that work with families of children and youth with disabilities. They offer a range of information and services on the subject of assistive technologies. The FCTD have four new Assistive Technology Fact Sheets available on their website.

- [Center for Technology in Education \(CTE\)](http://cte.jhu.edu) - <http://cte.jhu.edu>

This website is dedicated to assisting parents and educators in removing barriers to achievement, especially for children with disabilities. It illustrates how to assess individual learning needs and how to implement assistive and instructional technologies that allow students to participate in daily academic activities and improve achievement.

### **Individual Education Program (IEP) and Individual with Disabilities Education Act (IDEA)**

- [Accommodations, Modifications, and Alternate Assessments and the IEP](http://www.greatschools.org/LD/school-learning/accommodations-IEP.gs?content=713)

<http://www.greatschools.org/LD/school-learning/accommodations-IEP.gs?content=713>

This website describes accommodations, modifications, and alternate assessments, how and when they may be appropriate for a child with special needs, and how they affect instruction and assessment.

- [Bridges4Kids IEP Goals and Objectives Bank](http://www.bridges4kids.org/IEP/iep.goal.bank.pdf) - <http://www.bridges4kids.org/IEP/iep.goal.bank.pdf>

This 177-page document assists parents and professionals in forming goals for children of all ages in the special education system. The Goal Bank allows users to locate specific goals as used in the eSIS SPED Full software. Content areas include English, functional academics, independent living, mathematics, mathematics readiness, motor, recreation and leisure, self-management and daily living, social emotional, speech and language, study skills, and vocational/career education.

- [Standards-Based Individualized Education Program Examples –](http://projectforum.org/docs/Standards-BasedIEPEexamples.pdf)  
<http://projectforum.org/docs/Standards-BasedIEPEexamples.pdf>

This document presents a seven-step process to be used in developing a standards-based IEP. Each step is followed by guiding questions for the IEP team to consider in making data-based decisions. The student examples contained in this guide provide an opportunity for educators and parents to think about and apply the steps toward developing and implementing a standards-based IEP.

- [Center for Educational Networking](http://www.cenmi.org) <http://www.cenmi.org>

CEN is a statewide education information network offering products and services.

- [IDEA Partnership](http://www.ideapartnership.org) [www.ideapartnership.org](http://www.ideapartnership.org)

This Web site provides information about the collaborative work of more than 55 national organizations, as well as technical assistance providers, and state and local organizations and agencies. Together with the Office of Special Education Programs, the partner organizations form a community with the potential to transform the way we work. IDEA Partnership facilitates interaction and shared work across professional organizations addressing common issues.

- [IEP Overview](http://www.nichcy.org/EducateChildren/IEP/Pages/overview.aspx) <http://www.nichcy.org/EducateChildren/IEP/Pages/overview.aspx>

This website defines the IEP process and assists in preparing first time parents of children with special education needs.

- [ERIC \(Educations Resources Information Center\) - Creating Useful Individualized Educational Programs \(IEPs\)](http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/16/d3/23.pdf) –

[www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content\\_storage\\_01/0000019b/80/16/d3/23.pdf](http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/16/d3/23.pdf)

This digest was created by ERIC, THE EDUCATIONAL RESOURCES INFORMATION CENTER (1-800-LET-ERIC). It is a useful guide in helping individuals create IEPs that are in accordance with IDEA requirements.

- [IEP Goals: The Basics](http://www.greatschools.org/LD/school-learning/individualized-education-program-iep-goals.gs?content=709) - [www.greatschools.org/LD/school-learning/individualized-education-program-iep-goals.gs?content=709](http://www.greatschools.org/LD/school-learning/individualized-education-program-iep-goals.gs?content=709)

This website assists in writing annual, measurable goals within your child's IEP in specific areas of disability – academic, developmental, and functional. Goals represent what you and the other IEP team members think your child will be able to accomplish in his area(s) of disability - academic, developmental, and functional - in a year's time.

- [National Center for Learning Disabilities IDEA Parent Guide](http://www.nclld.org/publications-a-more/parent-advocacy-guides/idea-parent-guide) - [www.nclld.org/publications-a-more/parent-advocacy-guides/idea-parent-guide](http://www.nclld.org/publications-a-more/parent-advocacy-guides/idea-parent-guide)

An online guide for parents to the Individuals with Disabilities Education Act explaining the federal laws that underpin special education in every state. Teachers can use the guide to better understand the rights and requirements of their students with special needs.

- [National Dissemination Center for Children with Disabilities](http://www.nichcy.org/Pages/Home.aspx) - [www.nichcy.org/Pages/Home.aspx](http://www.nichcy.org/Pages/Home.aspx)

A project of the Academy for Educational Development, NICHCY offers information on various aspects of disability, including IDEA legislation.

- [National Early Childhood Center](http://www.nectac.org/idea/idea.asp) - [www.nectac.org/idea/idea.asp](http://www.nectac.org/idea/idea.asp)

The NEC Center website offers a series of documents that review the statutory changes in IDEA 2004. The site also offers links to summaries of changes in the law prepared by various groups.

- [U.S. Department of Education: Model IEP Form](http://idea.ed.gov/download/modelform1_IEP.pdf) - [http://idea.ed.gov/download/modelform1\\_IEP.pdf](http://idea.ed.gov/download/modelform1_IEP.pdf)

This document specifies Part B regulations (34 CFR §§300.320-300.328) regarding the IEP content as well as procedures school districts must follow to develop, review, and revise the IEP for each child.

- [U.S. Department of Education – Office of Special Education](http://www.osepideasthatwork.org/toolkit/index.asp) -  
www.osepideasthatwork.org/toolkit/index.asp

This online Tool Kit brings together the most current and accurate information, including research briefs and resources designed to improve instruction, assessment, and accountability for students with disabilities. The Tool Kit is intended to assist state personnel, schools and families in their efforts to ensure that all students with disabilities receive a quality education.

- [U.S. Department of Education, Special Education & Rehabilitative Services, IDEA 2004 News, Information and Resources](http://www2.ed.gov/policy/speced/guid/idea/idea2004.html) -  
www2.ed.gov/policy/speced/guid/idea/idea2004.html

This website offers up-to-date news, information and resources on *IDEA*.

- [Congressional Research Service – IDEA Analysis](http://www.cec.sped.org//AM/Template.cfm?Section=Home&WebsiteKey=ccc2b576-80bf-48af-8827-0acb530166fb)  
http://www.cec.sped.org//AM/Template.cfm?Section=Home&WebsiteKey=ccc2b576-80bf-48af-8827-0acb530166fb

This website provides an analysis of the IDEA law published by Congressional Research Service, a part of the Library of Congress that serves as the research arm of Congress.

- [Wrightslaw](http://www.wrightslaw.com) - www.wrightslaw.com

Parents, advocates, educators and attorneys go to IDEA 2004 at Wrightslaw for information about IDEA issues: child find, eligibility, evaluations, reevaluations, high stakes testing, IEPs, accommodations, alternate assessments, educational placements, transition, parental rights and more

### **Parent Advocacy and Listservs**

- [CP Parent](http://www.cpparent.org) - www.cpparent.org

The CPParent.org web site supports the CPParent email list. CPParent is a group of parents, caregivers and others who work with children with cerebral palsy.

- [Bridges4Kids](http://www.bridges4kids.org) – www.bridges4kids.org

This non-profit parent organization provides a comprehensive system of information and referral for parents and professionals working with children from birth through transition to adult life.

- [Parent Advocacy Coalition for Educational Rights Center](http://www.pacer.org) - www.pacer.org

PACER's mission is to expand opportunities and enhance the quality of life of children and young adults with disabilities and their families, based on the concept of parents helping parents.

- [Family Center](http://www.fctd.info/about/purpose.php) - www.fctd.info/about/purpose.php

Family Center is a resource designed to support organizations and programs that work with families of children and youth with disabilities. The Center offers a range of information and services on the subject of assistive technologies for organizations, parents, educators and interested friends.

- [Michigan Alliance for Families](http://michiganallianceforfamilies.org) - http://michiganallianceforfamilies.org

Michigan Alliance for Families provides information, support and education to families of children and adults with disabilities from birth to age 26 who are in the educational system. The purpose of the project is to increase the involvement of families in their children's education and the educational system in general.

- [Partners in Education](http://www.partnersinpolicymaking.com/education) - [www.partnersinpolicymaking.com/education](http://www.partnersinpolicymaking.com/education)

This 6 hour, self-directed e-learning course helps parents with children who have developmental disabilities to understand and maximize the benefits of special education services and inclusion for their children.

- [Council for Exceptional Children](http://www.cec.sped.org//AM/Template.cfm?Section=Home) - [www.cec.sped.org//AM/Template.cfm?Section=Home](http://www.cec.sped.org//AM/Template.cfm?Section=Home)

CEC is the largest international professional organization dedicated to improving educational outcomes for individuals with exceptionalities, students with disabilities, and/or the gifted. CEC advocates for appropriate governmental policies, sets professional standards, provides continual professional development, advocates for newly and historically underserved individuals with exceptionalities, and helps professionals obtain conditions and resources necessary for effective professional practice.

- [IESNews Listserv](http://www2.ed.gov/about/offices/list/ies/signupform.html) - [www2.ed.gov/about/offices/list/ies/signupform.html](http://www2.ed.gov/about/offices/list/ies/signupform.html)

IESNews Listserv is a free service offered by the U.S. Institute of Education Sciences. Information available on this IES Web site includes the latest information on such topics as funding and training opportunities, IES-sponsored research, new publications, and education facts and figures from the National Center for Education Statistics.

- [Great Schools](http://www.greatschools.org/LD.topic?content=1541) - [www.greatschools.org/LD.topic?content=1541](http://www.greatschools.org/LD.topic?content=1541)

This website provides support, resources and information free of charge to parents of children with learning disabilities and to children themselves.

- [The National Organization on Disability \(NOD\) e-Newsletter](http://www.nod.org/index.cfm?fuseaction=page.viewPage&pageID=26) - [www.nod.org/index.cfm?fuseaction=page.viewPage&pageID=26](http://www.nod.org/index.cfm?fuseaction=page.viewPage&pageID=26)

The NOD e-newsletter includes news addressing the participation and contributions of people with disabilities in all aspects of life, including news from NOD as well as disability news, information, and resources from a variety of national and international sources.

## Appendix B

### Federally Funded Reading Resources

- [National Reading Panel \(NRP\)](#) – a United States government body created in 1997 at the request of Congress and charged with the mission of evaluating the effectiveness of different approaches used to teach children to read. The subsequent NRP report that was released in 2000 was used as the basis for creation of the Reading First program, a part of the No Child Left Behind legislation enacted under then-President George W. Bush. This legislation has been the impetus for increased research into how to improve curricula in an effort to increase the number of children who are able to meet academic requirements each year. One aspect of this research involves ways to adapt classroom materials to make them more accessible to all children. For children with CP and associated speech and motor impairments, this becomes a critical and challenging task.  
[www.nationalreadingpanel.org](http://www.nationalreadingpanel.org)
- [What Works Clearinghouse \(WWC\)](#) – established by the U.S. Department of Education's Institute of Education Sciences (IES) in 2002, the WWC has become a central source of scientific evidence for what works in education. Among other functions, the WWC helps educators make informed decisions regarding the effectiveness of specific programs and interventions by providing rigorous reviews of current research.  
<http://ies.ed.gov/ncee/wwc>
- [National Instructional Materials Access Center \(NIMAC\)](#) - created under IDEA 2004, NIMAC is a federally funded, national electronic file repository that uses assistive technology to make core print instructional materials available in an electronic format.  
<http://www.nimac.us>

### Accessible Reading Curriculums

- [Early Literacy Skills Builder \(ELSB\)](#), Browder, D et al, 2007 - a program designed to accelerate reading development in students with moderate and severe cognitive disabilities that addresses the five essential components of reading identified by the National Reading Panel (2000). The ELSB promotes the use of grade appropriate literature through giving teachers a method to share stories. Assistive technology adaptations are incorporated throughout this scripted early literacy program.  
<http://education.uncc.edu/access/RAISEProject.htm>  
<http://www.attainmentcompany.com/featured/elsb/>
- [Project RAISE \(Reading Accommodations and Interventions for Students with Emergent Literacy\)](#) – a project developed by the University of North Carolina at Charlotte (U.S. Department of Education Contract #H324K04004) to evaluate the effects of the development and implementation of the **Early Literacy Skills Builder (ELSB)**.  
[http://www.speechpathology.com/articles/article\\_detail.asp?article\\_id=337](http://www.speechpathology.com/articles/article_detail.asp?article_id=337)
- [Accessible Literacy Learning \(ALL\) Curriculum](#) –David McNaughton, and Janice Light, Pennsylvania State University, 2009 - A unique, **evidence-based reading** curriculum designed to teach reading skills to students with a range of disabilities, including cerebral palsy, Down syndrome, autism and developmental apraxia. ALL is also

ideal for teaching reading to individuals who use augmentative and alternative communication (AAC). <http://aacliteracy.psu.edu/AdditionalResources.html>

### **Texts on Literacy**

- ***Emergent Literacy and Language Development: Promoting Learning in Early Childhood.*** Paula M. Rhyner, Ed., Guilford Press: New York, 2009. This text explores the connection between language acquisition and emergent literacy skills, and how this sets the stage for later literacy development.
- ***Language and Literacy Learning in Schools. Challenges in Language and Literacy.*** Elaine R. Silliman and Louise C. Wilkinson, Eds., Guilford Press: New York, 2007. This text presents evidence-based practices for integrating language and literacy knowledge to enhance children's learning in today's standards-based classrooms. The authors identify models for effective collaboration among speech-language pathologists, general and special educators, and reading specialists.