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This DLRP IT Toolbox on Universal Design was produced by the Southwest Educational Development Laboratory (SEDL) through a subcontract with the Disability Law Resource Project (DLRP).

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Introduction

The DLRP Toolbox is intended to provide online informational resources in the area of universal design applied to educational environments. The resources in the toolbox have been selected based upon the following characteristics:

- addresses a range of applications and approaches that lessen physical and teaching/learning barriers for all learners;
- benefits all learners by expanding the options and avenues through which instruction occurs;
- minimizes the disadvantage that inaccessible technology and electronic communication systems can present for some learners; and
- maximizes the abilities and skills of all learners to become marketable in the commercial environment and successful in higher education learning environments.

The DLRP Toolbox is divided into six major sections including the major sections of Universal Design Definitions, Descriptions, and Tools; DLRP Universal Design Modules DLRP Fact Sheets; NIDRR-Sponsored Research and Demonstration Projects Related to Universal Design; NIDRR Grantee Resources Related to Universal Design (Selected); and Universal Design State Initiatives

Module Introduction

The DLRP Toolbox contains four modules that are designed to provide learning opportunities for both general and special education classroom teachers in the area of universally designed learning (UDL). Module provides information, materials, and resources that can be used to self-direct learning or for use in group settings.

Topics covered by the module series includes:

- What is Universal Design for Learning and How Does it Relate to Technology Use in Special Education?
- Exploring Technology Resources
- Analyzing Lesson Plans
- Raising Awareness and Promoting Advocacy
I. Universal Design Definitions, Descriptions, and Tools

Education Perspectives

• Accessibility and Universal Design
  http://www.ed.gov/about/offices/list/ovae/pi/AdultEd/disaccess.html
  This U.S. Department of Education resource provides information and links to resources related to universal design.

• Curriculum Access and Universal Design for Learning
  http://ericec.org/digests/e586.html
  With the reauthorization IDEA and the No Child Left Behind Act 2001, much emphasis has been placed on providing access to the general curriculum for all students. There are several strategies that educators can employ to give these students access, including using a curriculum that has been universally designed for accessibility.

• Quality Indicators for Assistive Technology Services (QIAT)
  http://sweb.uky.edu/~jszaba0/QIAT.html
  The QIAT Consortium is a nationwide effort that comprised of hundreds of individuals who provide input into the ongoing process of identifying, disseminating, and implementing a set of widely-applicable quality indicators for assistive technology services in school settings. A printable self-evaluation matrix is available on this Web site.

• Research Synthesis: What is all the Buzz about Universal Design for Learning
  Research review on Universal Design in educational settings prepared by the National Association of State Directors of Special Education.

• Universally Designed Instruction
  http://ericec.org/digests/e641.html
  By definition, universal design for learning (UDL) is the design of instructional materials and methods that makes learning goals achievable by individuals with wide differences in their abilities. Universal design is attained by means of flexible curricular materials and activities that provide alternatives for students. As much as possible, these "designed-in" alternatives, which include different assistive technologies and cognitive supports, do not have to be added by teachers. However, effective use of the materials requires that the teacher be familiar with the various teaching strategies necessary to reach students of widely varying abilities, and many teachers are not.

• Universal Design in the Classroom and the Computer Lab
  http://staff.washington.edu/sherylb/univ_pacer.html
  Ensuring access to quality instruction by utilizing the universal design for learning principles and framework will minimize the need for individualized
accommodations and modifications in classrooms and other instructional settings.

• What is Universal Design?
  http://www.rit.edu/~classact/side/universaldesign.html
  This underlying principle directs the application of 'accessibility' to building structures, to public spaces, to classrooms and curriculum, and to websites. Although such accommodations are known to benefit disabled persons, they also ultimately benefit all persons, whether disabled or not.

Engineering Perspectives

• The Concept of Universal Design
  http://www.ap.buffalo.edu/idea/Publications/The concept of Universal Design.htm
  Universal Design is different than accessible design. Accessible design means products and buildings that are accessible and usable by people with disabilities. Universal design means products and buildings that are accessible and usable by everyone, including people with disabilities.

• Playworld Systems
  http://www.playworldsystems.com/ada2.asp
  This resource offers some general access guidelines required by the ADA related to playgrounds.

• The Universal Design File: Designing for People of All Ages and Abilities
  This resource provides history and principles of Universal Design.

• The World Playground, Parks & Recreation Products and Services Web Directory
  http://playgrounddirectory.com/accessible.htm
  The manufacturers listed in this resource offer handicap accessible, playground equipment, accessories and components and products.

Legal Perspectives

• Individuals with Disabilities Education Improvement Act of 2004 (IDEA)
  This resource provides basic information about IDEA and technical assistance tools for parents, teachers, and schools as well as links to laws and policy.

• IDEA Partnership
  http://www.idea-partnership.org/index.cfm
  This resource reflects the collaborative work of the Department of Education's Office of Special Education (OSEP) with more than 55 national organizations, technical assistance providers, and state and local organizations and agencies to provide information, resources, and services related to IDEA and NCLB.
• Information Technology Technical Assistance and Training Center
  http://www.ittatc.org/laws/state.php
  This resource offers links to State E&IT Accessibility Initiatives as well as links to
documents and resources on Section 508 of the Rehabilitation Act, Section 255
of the Telecommunications Act, related legislation for disability access.

• No Child Left Behind (NCLB)
  This resource provides information and guidance for parents, tools for student
performance, teachers and schools, and model pilot program information for
states.

Universal Design in Instructional Technologies

• AIR for Texas High Schools
  http://www.knowbility.org/air-high/?content=home&PHPSESSID=
  056bf3c92a17373dace7d21f2a4fd71f
  Describes the Accessibility Internet Rally for Texas High Schools designed to
expand skills of teachers and students in web site accessibility on a no-cost
basis.

• Assistive Technology Consideration
  This resource provides suggestions assistive technologies related to motor
aspects of reading, reading, mobility, vision, computer access, learning/studying,
activities of daily living, hearing, composing written material, math, control of the
environment, communication, recreation, position and seating, and terminology
and IDEA resources.

• The Faculty Room
  http://www.washington.edu/doit/Faculty/
  The Faculty Room is a space for faculty and administrators at postsecondary
institutions to learn about how to create classroom environments and academic
activities that maximize the learning of all students, including those with
disabilities. It includes six primary areas that address issues faced by
postsecondary educators.

• Making Educational Software and Web Sites Accessible: Design Guidelines
  Including Math and Science Solutions
  http://ncam.wgbh.org/cdrom/guideline/
  Students with disabilities are increasingly placed in inclusive classrooms where
they learn alongside their peers. This poses a challenge to teachers and students
because instructional materials may not be available in a form that is accessible
to the disabled student. Inaccessible materials stigmatize students with
disabilities by preventing them from using the same materials as their peers and
can limit their educational opportunities. As technology becomes more prevalent in classrooms, students with disabilities face even more challenges in keeping pace with their classmates.

- Teaching Every Student
  http://www.cast.org/teachingeverystudent/ideas/tes/
  The Teaching Every Student (TES) section of the CAST website supports educators in learning about and practicing universal design for learning.

- This resource, a list compiled by the DO-IT project at the University of Washington, is grouped by disability, to provide solutions for teachers and others in overcoming academic challenges. These resources include case studies, frequently asked questions, and a comprehensive list of resources for each disability.

  Blindness
  http://www.washington.edu/doit/Faculty/Strategies/Disability/Blindness/
  Students who are blind cannot access standard print materials. Students who have had no vision since birth may also have difficulty understanding verbal descriptions of visual materials and abstract concepts.

  Deaf or Hard of Hearing
  http://www.washington.edu/doit/Faculty/Strategies/Disability/Hearing/
  This page contains a collection of tools that will guide teachers in making their curriculum and delivery universally accessible to students who are deaf or hard of hearing.

  Health Impairments
  http://www.washington.edu/doit/Faculty/Strategies/Disability/Health/
  There is a range of health problems that may have a temporary or chronic impact on a student's academic performance. Diagnoses include arthritis, cancer, Multiple Sclerosis, Asthma, AIDS, or heart disease. Health impairments are not likely to directly affect learning. However, the secondary effects of illness, including the side effects of medications, can have a significant impact on memory, attention, strength, endurance, and energy levels.

  Learning Disabilities
  http://www.washington.edu/doit/Faculty/Strategies/Disability/LD/
  Students with specific learning disabilities may have average to above average intelligence but they may have difficulty in acquiring and/or demonstrating knowledge and understanding. This results in a lack of achievement for age and ability level, and a severe discrepancy between achievement and intellectual abilities.

  Low Vision
  http://www.washington.edu/doit/Faculty/Strategies/Disability/Vision/
Individuals who are identified as "legally blind" may have some functional vision, making accommodations for students with low vision appropriate.

Mobility Impairments
http://www.washington.edu/doit/Faculty/Strategies/Disability/Mobility/
Mobility impairments can be permanent or temporary. They can impact students in a variety of ways. Some students may take longer to get from one class to another, enter buildings, or maneuver in small spaces. In some cases physical barriers may inhibit entry into a building or classroom. Accessible transportation is also required for students to get to fieldwork sites. A student's physical abilities may also vary from day to day.

Psychiatric Impairments
http://www.washington.edu/doit/Faculty/Strategies/Disability/Psych/
Psychiatric impairments range from mild depression to chronic disorders such as schizophrenia or bipolar disorder. Negative stereotypes and the fact that these disabilities are typically "invisible" further complicate making accommodations for students with these disorders.

Universal Design in the Curriculum

• Balanced Instructional Support and Challenge in Universally Designed Learning Environments
http://www.cast.org/publications/ncac/ncac_balsupport.html
This futures paper was written with support from the National Center on Accessing the General Curriculum, U.S. Department of Education, Office of Special Education Programs (OSEP).

• Universal Design Education Online
http://www.udeducation.org/
This site supports educators and students in their teaching and study of universal design.

• Universal Design for Learning and the Transition to a More Challenging Academic Curriculum: Making It in a Middle School and Beyond
http://www.ncset.org/publications/viewdesc.asp?id=2165
A new approach to teaching and learning can help middle and secondary school teachers more effectively accommodate different learning styles. This approach, referred to as "universal design," holds potential for easing the transition to middle school and helping all students achieve academic success in their secondary school years.

• Universal Design for Learning Solutions Finder
http://www.cast.org/teachingeverystudent/tools/udlsolutionsfinder.cfm
The key to helping all students achieve is identifying and removing barriers from our teaching methods and curriculum materials. One effective way to do this is to expand your teaching toolbox with digital media and software. To accommodate
a broad spectrum of learners, universally designed curricula require a range of options for accessing, using, and engaging with learning materials. The materials themselves, as well as the teaching approaches, need to be sufficiently flexible to support varied pathways towards common learning goals. This resource includes the:

Universal Design for Learning Tutorial
http://www.cast.org/teachingeverystudent/tools/udlsolutionstutorial.cfm

Universal Design for Learning Finder Tool
http://www.cast.org/teachingeverystudent/tools/udlsolutionstool.cfm

Deriving Universal Design for Learning Solutions Template
http://www.cast.org/teachingeverystudent/tools/udlsolutionstemplate.cfm

• Universal Design Network
http://www.universaldesign.net/
The Universal Design Network is the Web presence of the Global Universal Design Educator’s Network. The Network is an informal coalition of people committed to universal design education. This Web site was developed to invite participation, provide opportunities for interaction, and to connect individuals to the outstanding universal design initiatives around the world.

Universal Design-Related Tools and Toolboxes

• Teaching with Electronic Technology
http://www.wam.umd.edu/~mlhall/teaching.html
A collection of various Web-based resources that are related to the use of electronic technology in teaching.

• Accessible Software Guidelines
http://trace.wisc.edu/world/computer_access/software/
The following list of application software guidelines include information useful for designing accessible software applications. Several of the links below provide specific guidance on software accessibility; others provide general user interface design guidance.

  • Apple Computer, Inc.
  Mac OS 8 Human Interface Guidelines

  • IBM
  Special Needs Systems Guidelines

  • Microsoft
  Microsoft Windows Guidelines for Accessible Software Design
http://web.cs.bgsu.edu/maner/uiguides/msaccess.htm
and

• The Open Group
  Motif Documentation
  http://www.opengroup.org/publications/catalog/mo.htm

• Trace Research & Development Center
  Application Software Design Guidelines
  http://www.trace.wisc.edu/docs/software_guidelines/toc.htm

• World Wide Web Consortium Web Accessibility Initiative
  Authoring Tool Accessibility Guidelines 1.0
  http://www.w3.org/TR/WAI-AUTOOLS

• World Wide Web Consortium Web Accessibility Initiative
  User Agent Accessibility Guidelines 1.0 W3C Working Draft 7 July 2000
  http://www.w3.org/WAI/UA/WD-UAAG10-20000707/

• Toolbox for Educators: Technology for mild Disabilities Providing Access to the
  General Education Curriculum
  http://www.ed.sc.edu/caw/toolboxvendors.html
  A variety of applications are presented and described in this resource. Information about obtaining each application is provided.

• Designing Accessible Web Pages
  http://www.uic.edu/depts/accc/newsletter/adn29/webaccess.html
  This resource provides information and links to resources that can be of assistance in creating accessible Web pages.

• Family Guide to Assistive Technology
  http://www.pluk.org/AT1.html
  Assistive technology is redefining what is possible for people with a wide range of cognitive and physical abilities. In the home, classroom, workplace, and community, assistive technology is enabling individuals with disabilities to be more independent, self-confident, productive, and better integrated into the mainstream.

Web Design Perspectives

• Section 508 Tutorial: Developing Accessible Software
  http://www.access-board.gov/sec508/software-tutorial.htm
  This tutorial illustrates the application of the Section 508, 36 CFR 1194.21, requirements for Software Applications and Operating Systems, Technical Provisions (a)-(l). A program for a six-function calculator is developed, named
**SFCalculator.** The accessibility requirements of 1194.21 are illustrated during the development of *SFCalculator.*

- **Speech Synthesis (Text-to-Speech)**
  This text-to-speech system converts selected text to artificial speech and reads text aloud through the computer's sound card or other speech synthesis device. Selected text is analyzed by the software, restructured to a phonetic system that calculates its pronunciation, and said in its context.

- **WebAIM**
  This resource provides information about a variety of tools used for accessible web development and evaluating web content for accessibility. In addition to general purpose accessibility tools, video caption tools, colorblindness simulator, and HTML/CSS validators are among some of the resources available.

- **Web Content Accessibility Guidelines**
  [http://www.w3.org/TR/WAI-WEBCONTENT/](http://www.w3.org/TR/WAI-WEBCONTENT/)
  This is a reference document for accessibility principles and design ideas. Some of the strategies discussed in this document address certain Web internationalization and mobile access concerns.

## II. DLRP Universal Design Modules (in final development)

- **Special Education and Technology**
  These four professional development modules and related resources are intended to introduce special and general educators to the roles technology might play in providing greater access to learning for students with a variety of disabilities.
  [http://www.ncddr.org/dlrp/modules](http://www.ncddr.org/dlrp/modules)
  
  **Module 1:** What is Universal Design for Learning and How Does it Relate to Technology Use in Special Education?
  [http://www.ncddr.org/dlrp/modules/#m1](http://www.ncddr.org/dlrp/modules/#m1)
  
  **Module 2:** Exploring Technology Resources
  [http://www.ncddr.org/dlrp/modules/#m2](http://www.ncddr.org/dlrp/modules/#m2)
  
  **Module 3:** Analyzing Lesson Plans
  [http://www.ncddr.org/dlrp/modules/#m3](http://www.ncddr.org/dlrp/modules/#m3)
  
  **Module 4:** Raising Awareness and Promoting Advocacy
  [http://www.ncddr.org/dlrp/modules/#m4](http://www.ncddr.org/dlrp/modules/#m4)

**Additional Resources**
III. DLRP Fact Sheets

• DLRP's "Plugged In" Fact Sheet Series
  http://www.ncddr.org/dlrp/factsheets/

   Fact Sheet 1: Coming to Terms with Technology
  http://www.ncddr.org/dlrp/factsheets/1/index.html

   Fact Sheet 2: Finding Balance: Accessible IT Framework
  http://www.ncddr.org/dlrp/factsheets/2/index.html

   Fact Sheet 3: IT and Your Classroom: Learning with Technology


   Fact Sheet 5: Accessibility in the Classroom: Universal Design

  http://www.ncddr.org/dlrp/factsheets/6/index.html

IV. NIDRR-Sponsored Research and Demonstration Projects Related to Universal Design (Selected)

• ABLEDATA: Your Source for Assistive Technology Information
  http://www.abledata.com/
  ABLEDATA provides objective information about assistive technology products and rehabilitation equipment available from domestic and international sources.

• Analyzing Universal Design Resource Needs for Practitioners in Industry and Government
  http://www.ncddr.org/cgi-bin/mysql/nidrrprofiles.cgi?showproj=H133G040151&location=projabstract
  This project draws from past human factors research which has examined the quality of design guidelines, the design process in general, and needs/task analyses to support design-tool creation. Lessons from the human factors field
are considered in relation to studies of universal design practice in industry, and needs analysis to support universal design resource creation.

- **Inclusive Indoor Play**  
  [http://www.ncddr.org/cgi-bin/mysql/nidrrprofiles.cgi?showproj=H133G040324
&location=projabstract](http://www.ncddr.org/cgi-bin/mysql/nidrrprofiles.cgi?showproj=H133G040324
&location=projabstract)  
  The purpose of this project is to research indoor play environments, develop universal design play guidelines, and design models of play environments that are safe and accessible to all children.

- **Information Technology Technical Assistance and Training Center (ITTATC)**  
  [http://www.ncddr.org/cgi-bin/mysql/nidrrprofiles.cgi?showproj=H133A000405
&location=projabstract](http://www.ncddr.org/cgi-bin/mysql/nidrrprofiles.cgi?showproj=H133A000405
&location=projabstract)  
  The Center promotes: (a) widespread use of accessible and useable electronic and information technology in the home, school, and workplace; and (b) the benefits of universal design to multiple stakeholders, including technology manufacturers, product designers and engineers, technical writers, marketers, distributors, and purchasers of information technology.

- **Mainstreaming Web Accessibility: Making it Cost-Effective, User-friendly, and Attractive to Non-Technical Audiences**  
  [http://www.ncddr.org/cgi-bin/mysql/nidrrprofiles.cgi?showproj=H133S050170
&location=projabstract](http://www.ncddr.org/cgi-bin/mysql/nidrrprofiles.cgi?showproj=H133S050170
&location=projabstract)  
  This project develops a product that improves web accessibility and makes it cost-effective and attractive to non-technical audiences. Universal by Design tests and evaluates the usefulness and effectiveness of the resulting prototype, eliciting key issues including, but not restricted to, key user interface, technical features, and functionality.

- **National Center on Accessible Information Technology in Education (AccessIT)**  
  [http://www.ncddr.org/cgi-bin/mysql/nidrrprofiles.cgi?showproj=H133D010306
&location=projabstract](http://www.ncddr.org/cgi-bin/mysql/nidrrprofiles.cgi?showproj=H133D010306
&location=projabstract)  
  The National Center on Accessible Information Technology in Education (AccessIT) at the University of Washington serves to increase the access of individuals with disabilities to information technology in educational institutions at all academic levels nationwide. Popular resources include Web Course: Introduction to Accessible Information Technology in Education, Information Technology in Education Accessibility Checklist, Accessible University Mock Site, and Surfing the Web with a Screen Reader.

- **National Public Web Site on Assistive Technology**  
  [http://www.assistivetech.net/](http://www.assistivetech.net/)  
  This is a resource featuring a searchable database of assistive technologies and disability-related informational materials.

- **Rehabilitation Engineering Research Center on Telecommunications Access**
This Center identifies telecommunication access barriers in current and future technologies, work with others in the field to identify solution strategies, test them, implement any necessary standards, and assist industry in transferring the ideas into their commercial products. Activities of the Center include research, applied research and development, training and technical assistance, and dissemination and utilization.

- Rehabilitation Engineering Research Center on Universal Design and the Built Environment at Buffalo
  [link]
  The RERC on Universal Design and the Built Environment promotes the adoption of universal design. The Center's activities also include universal design education and technical assistance, along with publication and dissemination of universal design resources.

- Rehabilitation Engineering Research Center on Universal Interface and Information Technology Access
  [link]
  The focus of this RERC is on both access to information (e.g., content) in its various forms, as well as access to interfaces used within content and by electronic technologies in general. The research and development program is carefully designed to provide an interwoven set of projects that together advance accessibility and usability in a fashion that takes into account, and supports, the full range of access strategies used by manufacturers and people with disabilities.

- RESNA Technical Assistance Project
  [link]
  This site provides information about the services and assistance available through the assistive technology projects located in each state. To locate your state's assistive technology project review list of projects at:
  [link]

V. NIDRR Grantee Resources Related to Universal Design (Selected)

- Designing a More Usable World – for All
  [link]
  This resource identifies and describes a wide range of topics from standards and regulations to universal design tools and resources.

- Electronic Accessibility
  [link]
Overview of universal design principles and electronic accessibility issues.

- **Excerpts from Accessible Environments: Toward Universal Design**
  http://www.design.ncsu.edu:8120/cud/pubs/center/books/accenviron.htm
  Faced with a growing population of people with disabilities and advancing years, designers are finding an increased market as well as legal pressure to produce products, buildings and exterior spaces that are accessible to everyone.

- **General Guidelines for Improving Accessibility of World Wide Web Pages**
  http://www.ncddr.org/du/researchexchange/v02n01/genguide.html
  Good Web page design responds to the needs of viewers with disabilities. A commitment to making a site accessible requires some additional planning and testing, in addition to specific changes to documents or files. Most changes or additions to increase accessibility are small, and can be easily implemented. Making a Web page accessible should be routinely incorporated as a normal part of design and development rather than viewed as an afterthought.

- **Increasing the Accessibility of the Web Through Style Sheets, Scripts, and "Plug-ins"**
  http://trace.wisc.edu/docs/style_scripts_plugins/style_scripts_plugins.html
  This is a review of new page authoring guidelines that facilitate greater accessibility for users of the Web.

- **Principles of Universal Design**
  http://www.adagreatlakes.org/ProgramsAndServices/AudioConferencing/Archives/FY2000/default.asp?Year=2000&Session=8
  This is a transcript of a distance learning program presented by the publisher of *Universal Design Newsletter*.

- **Update on Strategies for Web Accessibility**
  http://www.ncddr.org/du/researchexchange/v03n03/update.html
  An Annotated Resource List is provided for those looking for additional references and resources related to Universal Design with an emphasis on WWW accessibility.

**VI. Universal Design State Initiatives**

- **Louisiana Center for Educational Technology (LCET) – Universal Design for Learning**
  http://www.doe.state.la.us/lde/lcet/399.html
  Bridging the Gap through Universal Design for Learning is a Louisiana Department of Education cross-division initiative for educators who are committed to improving educational outcomes for all learners.

- **Universal Design for Learning: Four State Initiatives April 2003**
This Quick Turn Around (QTA) summarizes information from interviews with four states regarding their Universal Design for Learning (UDL) initiatives.
The Disability Law Resource Project (DLRP) is a program of ILRU at TIRR in Houston, Texas. DLRP is one of 10 Disability and Business Technical Assistance Centers (DBTACs) funded by grant # H133D60012 provided by the Department of Education’s National Institute on Disability and Rehabilitation Research (NIDRR). Neither NIDRR nor DLRP are enforcement entities.