



Assistive Technology Regional Services (ATRS)

The Connection Between Assistive Technology (AT) and Universal Design For Learning (UDL)

Mary Jo Schneider
Elizabeth Bagley
Sue Maloney



South Carolina
Department of Education

Together, we can.

Office of Regional Services



Universal Design For Learning (UDL)

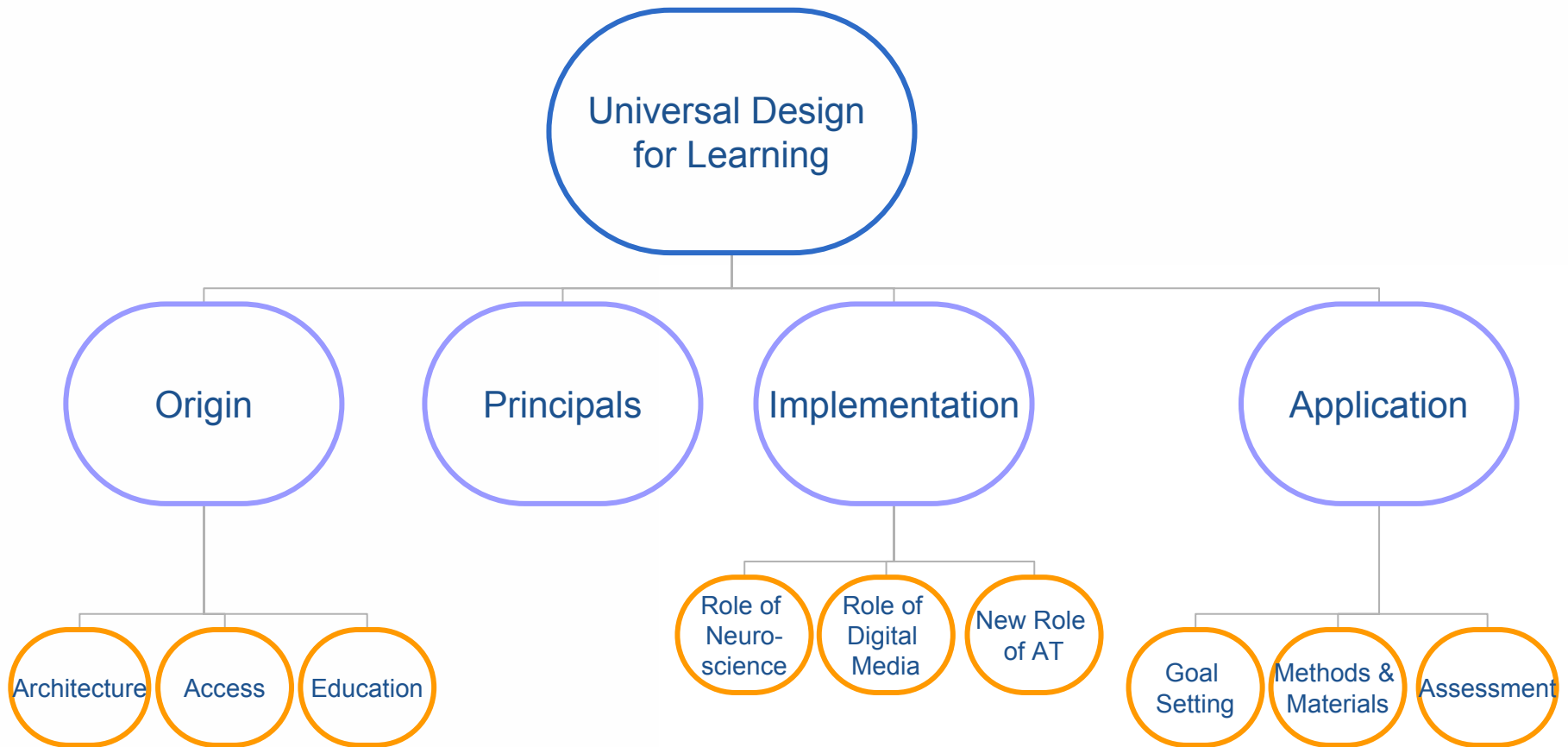
“The central practical premise of UDL is that a curriculum should include alternatives to make it accessible and appropriate for individuals with different backgrounds, learning styles, abilities, and disabilities in widely varied learning contexts.”

Rose and Meyer, (2002) *“Teaching Every Student in the Digital Age”*
The Center for Applied Special Technology (CAST)

www.cast.org



UDL Concept Map





Traditional vs. UDL Approach

Traditional Approach

- Social Studies Textbook
- Encyclopedia
- Map Materials
- Tag board
- Colored pencils
- Rulers

UDL Approach

- Printed text may be barrier for students with print or vision impairments. If digital text is available, teachers and students have options for: text-to-speech, Braille, and a variety of display formats.
- Provide various means and materials that students can use to create a map. Examples: (a) create a map with clay, (b) create a map electronically with computer tools (GIS), (c) have students verbalize for others the details of what to place on a map and where.



Who AT and UDL Help

- Students who are struggling academically in regular classes
- Students who are at risk of being placed in special education classes
- Students with disabilities
- English language learners



Functional Skills

- Reading
- Written Expression
- Math
- Problem-solving
- Communication
- Recreation
- Daily organization
- Seating/Positioning
- Hearing
- Seeing
- Self-Care
- Mobility
- Behavior
- Specific task-related skills



Reading Solutions

Students who are unable to:

- Read material on grade level
- Read fluently
- Read longer samples without fatigue
- Comprehend material
- Use age-appropriate vocabulary

may benefit from...

Reading Solutions

<http://www.readplease.com>

- Reads any text you see on your screen
- All purpose text-to-speech software



Digital Text

Benetech's BookShare

<http://www.bookshare.org/>

- Free access (OSEP grant)
- Books online in digital text format
- Over 34,000 titles

The screenshot shows the homepage of BookShare.org. At the top, there is a navigation bar with language options (Spanish | English), login fields for Email and Password, and a Login button. On the right side of the navigation bar are links for Help, Privacy, and Contact Us. The main content area features the BookShare.org logo, a search bar for titles or authors, and a 'Welcome to Bookshare' banner. A central section titled 'News Update' with a 'STAY UP TO DATE!' tagline highlights 'Major Great News about Bookshare.org'. The text below this headline describes a \$32 million grant from the U.S. federal Department of Education. A sidebar on the left contains a message about the organization's mission to increase accessibility for people with disabilities. A sidebar on the right lists various services and resources, including 'Books', 'Members', and 'Schools and Groups'.

Spanish | English
Email Password Login

Help | Privacy | Contact Us

BENETECH
BOOKSHARE.ORG

Welcome to Bookshare

Search for Title or Author

go

Bookshare.org
dramatically increases the accessibility of books for people with visual or other print disabilities. Help Bookshare.org build the collection of digital books.
[LEARN MORE >](#)

Bookshare.org
News Update
STAY UP TO DATE!

Major Great News about Bookshare.org

We're happy to share incredible news, which will transform Bookshare.org. On Friday, the Office of Special Education Programs of the U.S. federal Department of Education made a major five-year award of \$32 million to Bookshare.org. This will further the objectives of the Individuals with Disabilities Education Act (IDEA), by supplying high quality textbooks and educational materials to students with special needs.

This funding is to fully support all schools and students 26 years old and under with qualifying print disabilities in the United States, K-12 and post-secondary. We will provide these students with access to the entire Bookshare.org collection of accessible electronic books and to software for reading those books. As of

Books
Advanced Search
International Searching
Browse Authors
Browse Categories
Browse New Books
Embossed Braille
Submit a Book
Newspapers and Magazines

Members
About Membership
Individual Subscriptions
Join

Schools and Groups
About
Create a School or Group account
School and Group Resources
Membership Costs
Contact for School and



More Text-To-Speech

Free Downloads:

- Natural Reader -

<http://www.naturalreaders.com>

- Microsoft Option

<http://www.microsoft.com/reader/download/default.htm/>



More Digital Text Sources

Free Books & Videos Online

- South Carolina's Virtual Library – available in all SC public schools – <http://sc.discus.org>
- South Carolina Digital Video Library – available in all SC public schools - <http://www.streamlinesc.org>
- Internet Public Library - <http://www.ipl.org>
- Project Gutenberg - http://www.gutenberg.org/wiki/Main_Page
- University of Virginia's e-Book Library - <http://etext.lib.virginia.edu/ebooks/ebooklist.html>



More Digital Text Sources

Free Books & Videos Online (continued)

- Bartleby - <http://www.bartleby.com>
- Online Books at UPenn - <http://digital.library.upenn.edu/books/index.html>
- The Children's Literature Web Guide- <http://www.acs.ucalgary.ca/%7Edkbrown/rteacher.html>
- Classic Literature - <http://www.underthesun.cc/Classics/>
- Tongue twisters for kids - http://www.indianchild.com/tongue_twisters.htm -



Writing Impairments

Students who are unable to:

- Establish a purpose for writing
- Select a topic and identify the intended audience
- Generate ideas
- Organize ideas according to text structure

AND students who:

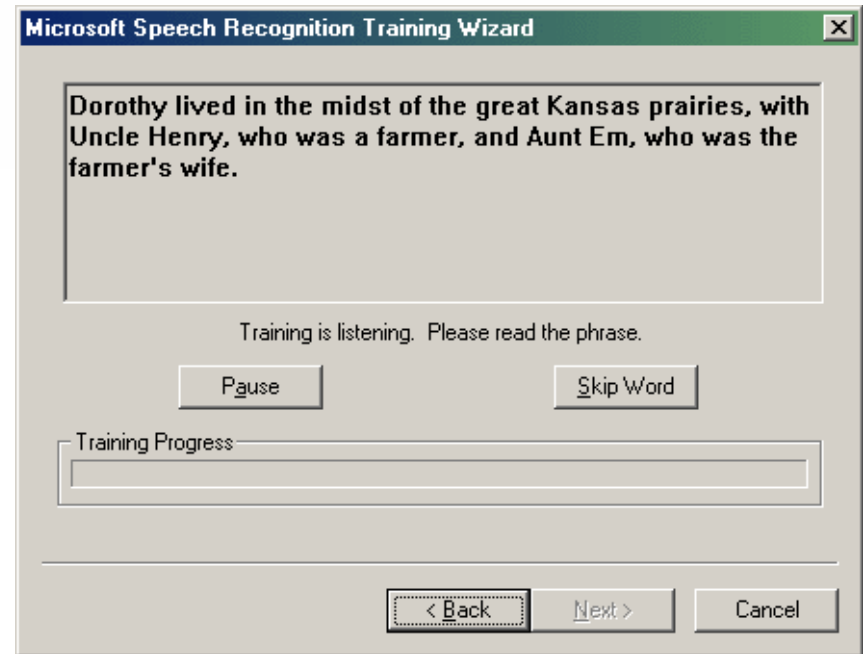
- Spend too much time on producing legible handwriting and proper spelling
- Produce papers that are unreadable and of poor quality
- Do not write what they can say

may benefit from...

MS Writing Solutions

MS Accessibility

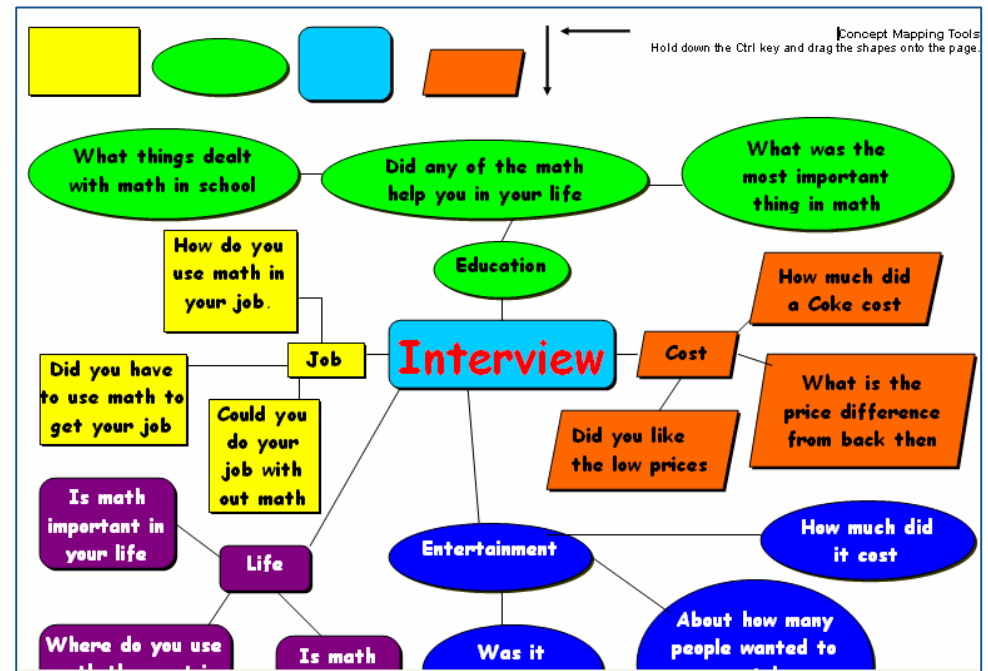
- To enable the language bar for speech-to-text and text-to-speech options.
 - Open MS Word. Click on Tools → Speech
- The user can train the computer to type what the user says.
- The document can then be read aloud.



Writing Solutions

Graphic Organizers

- Alternative ways to use the features in MS Word
 - To copy an object - Hold down the CTRL key while you drag the object





Writing Solutions

Freeware:

- *Read Write and Think* – interactive online tool to support reading and writing
http://www.readwritethink.org/student_mat/index.asp
- *Houghton Mifflin Education Place* - provides PDF files of many graphic organizers. With the hit of a button they are also available in Spanish
www.eduplace.com/graphicorganizer



Writing Solutions

More Freeware

- *Education Oasis* – provides PDF files of 58 different graphic organizers.
http://www.educationoasis.com/curriculum/graphic_organizers.htm
- *About.com-Special Education* - printable venns and concept webs in PDF, ready for classroom use. Great strategies to support reluctant and learning disabled writers.
http://specialed.about.com/od/graphicorganizers/Graphic_Organizers.htm



Writing Solutions

Students who are unable to:

- Revise or edit a draft
- Clarify meaning of text and expand ideas
- Make their writing more interesting and understandable to the reader
- Correct errors in the conventions of writing: spelling, capitalization, punctuation, and grammar

may benefit from...

Online Reference Tools

- Merriam Webster

- <http://www.merriam-webster.com>
- Talking website

The screenshot shows the Merriam-Webster Online website in a Windows Internet Explorer browser window. The browser's address bar displays the URL <http://www.merriam-webster.com/>. The website's header includes the Merriam-Webster logo and a navigation menu with links to Home, Visit Our Sites, Premium Services, Downloads, Word of the Day, Word Games, Open Dictionary, Spelling Bee Hive, Word for the Wise, Online Store, Help, and About Us. The main content area is divided into several sections:

- FREE Daily Features:** A row of links for Daily Crossword, Word Game, Daily Buzzword, Learner's Word of the Day, and Daily Podcast.
- Also Visit:** Links to Unabridged Dictionary, Learner's Dictionary, Word Central for Kids, Collegiate Dictionary, and Encyclopædia Britannica.
- Merriam-Webster OnLine Search:** A search box with a "Search" button and radio buttons for selecting a reference type: Dictionary, Thesaurus, Spanish-English, and Medical (marked as "NEW").
- WORD OF THE DAY:** The word "denigrate" is featured for October 22, 2007, with its definition and pronunciation.
- OPEN DICTIONARY:** The word "mojolic" is featured, submitted by an anonymous user, with its definition and pronunciation.
- Get the Latest:** A section with links to "Come on in and SPELL IT!", "In a Feeding Frenzy for More Words?", "Word Central is shifting gears!", and "Don't Call it a Day...".
- Come on in and SPELL IT!:** A section promoting the Scripps National Spelling Bee study site, www.myspellit.com.
- Word Central is shifting gears!:** A section announcing updates to the Word Central for kids website.
- And so much more.:** A large graphic with the text "And so much more." and a link to "FREE Merriam-Webster Tools".

The browser's status bar at the bottom shows "Done" and "Internet" with a 100% zoom level.



MS Reference Solutions

Microsoft Word lets you access the Dictionary and Thesaurus.

How it works:

1. Highlight a word and click on the Tools menu.
2. Select either Dictionary or Thesaurus and a new window will open.
3. The Dictionary definition can be copied and pasted into another document, in order to have it read aloud.
4. On the Mac, within the Thesaurus, the word selected to replace can be read aloud.
5. The Thesaurus links to the dictionary, to obtain definitions of synonyms.



Math Impairments

Students who :

- are unable to check their answer
- might practice incorrect answers
- need positive feedback after each problem

may benefit from...



Math Solutions

MS Excel Practice Worksheets

- Instant Feedback
- Reinforcement after EVERY problem
- Less teacher intensive
- Type the formula only once
- Don't practice errors

Exploring Comparing and Ordering Decimals 15

16 94%

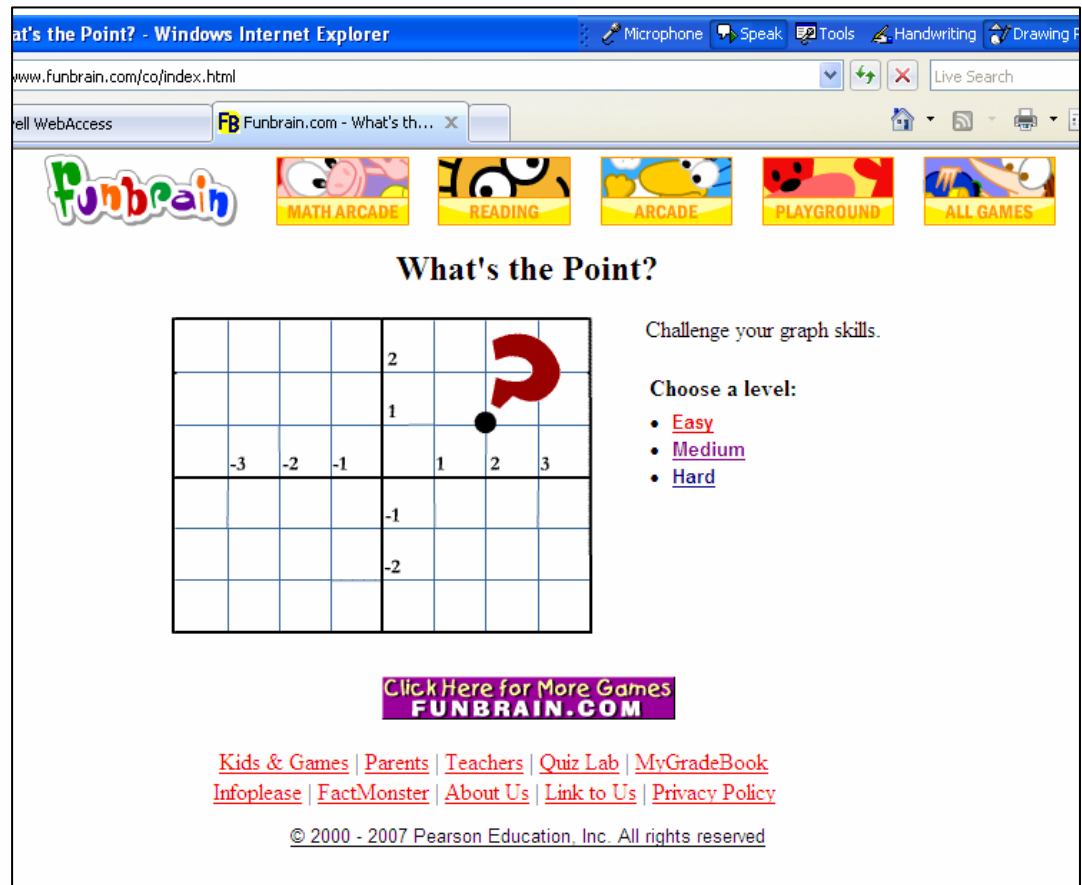
1)	0.2	>	0.06	Great
2)	0.5	>	0.45	Great
3)	0.99	<	1	Great
4)	0.6	>	0.59	Great
5)	0.3	<	0.33	Great
6)	0.3	>	0.30	Try Again
7)	1.5	>	1.32	Great
8)	2.8	>	2.09	Great
9)	0.4	<	0.46	Great

Math Solutions

Funbrain

- Academic Games
- All Subjects
- Standards Finder

<http://www.funbrain.com>



The screenshot shows a Windows Internet Explorer browser window displaying the Funbrain website. The address bar shows www.funbrain.com/co/index.html. The page features a navigation bar with icons for 'Funbrain', 'MATH ARCADE', 'READING', 'ARCADE', 'PLAYGROUND', and 'ALL GAMES'. The main content area is titled 'What's the Point?' and includes a coordinate plane with a red question mark and a black dot at the point (2, 1). The x-axis is labeled from -3 to 3, and the y-axis is labeled from -2 to 2. To the right of the grid, the text reads 'Challenge your graph skills.' and 'Choose a level:' followed by three options: 'Easy', 'Medium', and 'Hard'. Below the grid is a purple button that says 'Click Here for More Games FUNBRAIN.COM'. At the bottom of the page, there are several links: 'Kids & Games', 'Parents', 'Teachers', 'Quiz Lab', 'MyGradeBook', 'Infoplease', 'FactMonster', 'About Us', 'Link to Us', and 'Privacy Policy'. The footer contains the copyright notice: '© 2000 - 2007 Pearson Education, Inc. All rights reserved'.



Math Solutions

Free websites for Algebra, Geometry, Statistics and Probability.

- National Library of Virtual Manipulates
<http://nlvm.usu.edu/en/nav/vlibrary.html>
- Shodor Interactivate
<http://www.shodor.org/interactivate/>

Social Studies/Science

- US Map – practice capitals, location of states
- Dissecting - science class
- Community based instruction – items in a store





Built-in Accessibility

- Accessibility Options have been built in to every version of Microsoft Windows since Windows 95.
- More accessibility options have been added to each subsequent version of Windows.
- Comparison across Window versions:
<http://www/Microsoft.com/enable/products/chartwindow.aspx>



MS Accessibility Options

Technology options built into your computer so it is:

- Easier to see
- Easier to hear
- Easier to use the mouse
- Easier to use the keyboard

www.microsoft.com/enable



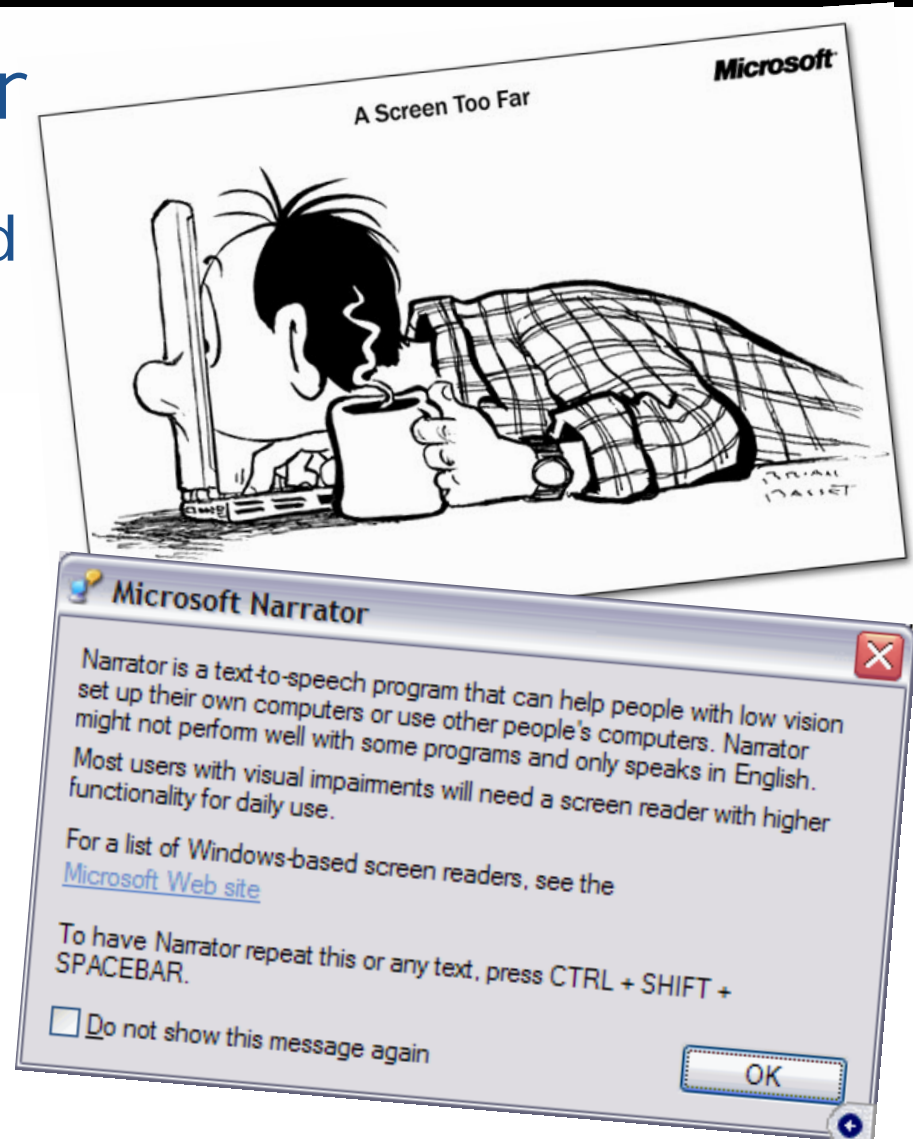
Screen Readers vs. Text-To-Speech

- Screen Readers
 - Read text and menus, describe graphics and give speech feedback to describe what is occurring on the screen
 - Developed for people with visual impairments to allow them to read the whole screen
- Text-To-Speech
 - Converts text from a computer document to speech
 - Developed for people with learning or reading problems, visual impairments, or for those who would like audio feedback from the computer

Vision Options

Microsoft Narrator

- Very basic screen reader that will read dialog boxes, and menus.
- Speaks only in English
- Click on:
 1. Start
 2. All Programs
 3. Accessories
 4. Accessibility
 5. Narrator





More Screen Readers

Free Downloads:

Orca - Free, open source screen reader for the GNOME desktop. Works with OpenOffice, Firefox, the Java platform and other applications.

<http://live.gnome.org/Orca>

BRLTTY - Screen reading program that allows a blind person using a refreshable braille display to access the Linux/Unix console (when in text mode). Drives the braille display and provides complete screen review functionality. Incorporates some speech capability.

<http://mielke.cc/brltty/>



Visual Impairment Solutions

Students who:

- are unable to see the small cursor on the screen
- are unable to read text on a screen
- need contrasting colors to read a screen

may benefit from...



Visual Imp. Solutions

Cursors that can be enlarged or animated for better visibility:

- Change the width and blink rate of the cursor within MS Windows
Start → Control Panel → Accessibility Options → Accessibility Options → Display
- Rabe's Big-Cursors (Win 95/98/NT/ME/2000)
<http://rbx.de/big-cursors/>
- Anicursor- includes animated and left-handed cursors
<http://www.anicursor.com/special.html>
- Large & high contrast cursors for Windows
<http://joescursors.tripod.com/HVCurPg.htm>



Visual Imp. Solutions

Digital Electronic Text

- The American Printing House for the Blind <http://www.aph.org>
Qualified students may obtain textbooks in formats such as braille and large print

Additional resources include:

- Bookshare.org - <http://www.bookshare.org>
- National Library Service for the Blind and Physically Handicapped (a primary source of electronic braille)
<http://www.loc.gov/nls/reference/factsheets/webbraille.html>
- Texas Text Exchange - <http://tte.tamu.edu/booksearch.php>
- Texas School for the Blind and Visually Impaired – free downloads of braille books
<http://www.tsbvi.edu/braille/index.htm>

Physical Impairment Solutions

Students who:

- Can't access a "regular" keyboard may benefit from an onscreen keyboard
- Start → All Programs → Accessories → Accessibility → On-screen Keyboard





Physical Imp. Solutions

On-Screen Keyboards

- Click-N-Type

Free on-screen virtual keyboard. Student must be able to control a mouse, trackball or other pointing device

<http://www.kidsdomain.com/down/pc/flashtyping.html>

- AAC Keys

Free keyboard and mouse emulation program for MS Windows-based computers. Translates commands into keystrokes and mouse movements, giving full control of the computer from another device such as an AAC system

<http://www.aac institute.org/Resources/ProductsandServices/AACKeys/AACKeys.html>

- Single Switch Performance Test

Free software to facilitate measurement of the ability to activate a single switch. SSPT measures the average time required to activate or release the switch (following visual and/or audio prompts) and also can measure the speed of repetitive activations.

<http://www.aac institute.org/Resources/ProductsandServices/SSPT/intro.html>



Physical Imp. Solutions

Keyboard access

- Dasher

This unique interface speeds up typing for a one-handed or switch-using student. By "zooming", it brings the letters to you, based on a prediction model (PC only)

<http://www.dasher.org.uk/TryJavaDasherNow.html>

- AI Bunny's Typing Class

Type the letters and see if the bunny can beat the turtle

<http://www.sunmoonusa.com/TryAI.htm>

- Flash Typing

Attempt to vaporize asteroids (letters) before they hit your space ship

<http://www.kidsdomain.com/down/pc/flashtyping.html>



Communication Solutions

“Speak For Yourself” – Free AAC System (Windows 2000 and above)

<http://www.latkids.org/download.php>

- 2 - 56 buttons
- Icon library
- Reads any phrase
- Uses Microsoft's synthetic speech
- Works in direct-select or scan mode.





AAC Resources

Free Pictures and Photos for AAC users

- Pictures Symbols - Over 4,000 symbols covering a wide range of categories including animals, clothing, people, school, money, emotions and more.

<http://www.imaginesymbols.com>

- Digital Photos - Thousands of photos by category including holidays, food, drink and everyday items.

<http://www.freedigitalphotos.net>

- Beyond Autism

Pictures for communication systems. May be used with Boardmaker or on its own by using a cut and paste method. Includes real pictures of many items, such as food, fast food places, stores, etc.

<http://trainland.tripod.com/pecs.htm>

Hearing Impairment Solutions

Students who:

- are deaf or hard of hearing
- use sign language as a means of communication
- need a visual dictionary

may benefit from...



Hearing & Communication

ASL Pro

- <http://www.aslpro.com>
- Quiz Me Products
- Video Dictionaries

The screenshot shows the ASL Pro website interface. At the top, there are navigation tabs: "Main Dictionary", "Religious Signs", "Conversational Phrases", and "ASL for Babies". The "Main Dictionary" tab is active. On the left side, there is a "Main Dictionary" section with a grid of letters from A to Z. Below this is a "Choices" section with a scrollable list of words, including "Actor", "Actress", "Acupuncture", "Acute", "Adapt", "Add", "Addition", "Address - Street", "Adhesive", and "Adjective". The "Actress" word is highlighted. On the right side, there is a video player showing a woman signing. The video player has a play button, a progress bar, and a volume control icon. The text "(c) 2005 ASLPro.com" is visible in the top right corner of the video player area. At the bottom of the page, there are navigation links: "About Us", "FAQ", "Contact Us", "Privacy Policy", and "Links".



Hearing & Communication

- ASL Lesson Tutor
<http://www.lessonstutor.com/ASLgenhome.html>
- Pics4Learning
Includes copyright-friendly images for education including American Sign Language. Includes thousands of images that have been donated by students, teachers, and amateur photographers
<http://pics.tech4learning.com/>
- Symbol World
Has many on-line stories, some recipes, poetry, news stories, etc. written and supported with picture icons <http://www.symbolworld.org/>



State and Federal Sanctions

All Students should:

- NCLB - Meet State Standards
- IDEA 04 - Access the general curriculum
 - Access instructional materials
 - Response to Intervention



S.C. State Technology Plan 2003-2008

50+ References to Assistive Technology

- Tools/Resources
- Coaches
- Teams
- District-Community Partnerships
- Training
- Integration
- Funding
- Needs
- Plans



ATRS Services

■ **Technical Assistance**

- Formation and support of AT teams within schools and districts
- Inventories of AT devices and tools available within state regions
- Collaborative sessions with regional instructional technology specialists
- Recommendations on interventions for assisting at-risk students

■ **Computer Skills Training**

- Use of freeware and shareware
- Use of MS Office tools



ATRS Services

- **Funding Assistance**
 - Identification of funding sources
 - Research into grant opportunities for districts, schools, and teachers
 - Formation of funding networks among AT professionals
- **E-News – “AT Connect”**
 - “AT Tech Tips”
 - News on free software, scheduled trainings, and upcoming conferences
 - Information about grant opportunities



Where We Are

- **Pee Dee Region**

Mary Jo Schneider, MCD,
CCC-SLP

Florence, SC

Phone: 843-661-4836

Fax: 843-661-4936

mschneid@ed.sc.gov

- **Midlands Region**

Elizabeth Bagley, EdD

Columbia, SC

Phone: 803-935-5389

Fax: 803-935-5371

ehbagley@ed.sc.gov

- **Low Country Region**

Sue Maloney, MEd

Ridgeland, SC

Phone: 843-987-0264

Fax: 843-987-0317

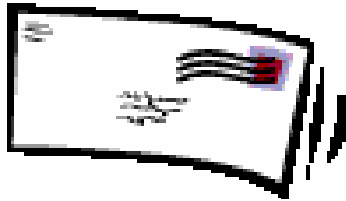
smaloney@ed.sc.gov

- **Upstate and Coastal
Regions**

Greenville and Charleston,
AT specialists coming soon



Contact us:



Elizabeth Bagley



Mary Jo Schneider



Sue Maloney

Assistive Technology Regional Specialists
Office of Regional Services
South Carolina State Department of Education

ehbagley@ed.sc.gov
803-935-3589 | phone

mschneid@ed.sc.gov
843-661-4836 | phone

smaloney@ed.sc.gov
843-987-0264 | phone

<http://www.ed.sc.gov>