

# Assistive Technology in Education

## the basics

*The following is intended as a very basic introduction to Assistive Technology systems, and includes evaluations of typical products. These evaluations are based on eight years of trials, experimentations, and field use with students ranging from elementary schools through graduate school, but, the opinions expressed here are mine, and do not represent the endorsement of any agency. – Ira Socol*

### One: Basic Digital Reading Software

The advantages of digital reading software in information acquisition and reading development are obvious, and the most basic software is free in both Windows and MacO/S, so why isn't it available on every school computer? Apple Computers have this capability built in, it simply needs to be turned on. For Windows both ReadPlease2003 (which is free), and Microsoft Reader (also free) offer easy solutions. ReadPlease will read any text pasted into its window. Reader reads books specifically converted to that format.

<i>Best</i>	Microsoft Reader	Download at: <a href="http://www.microsoft.com/reader/downloads/default.asp">http://www.microsoft.com/reader/downloads/default.asp</a> also download text-to-speech engine and MS Word conversion "RMR" tool
<i>Next</i>	ReadPlease2003	Download at: <a href="http://www.readplease.com/english/downloads/#rp2003">http://www.readplease.com/english/downloads/#rp2003</a> (when installing "uncheck" the install for the 'Plus' trial)
<i>Apple</i>	Speech	<a href="http://www.apple.com/macosx/features/speech/">http://www.apple.com/macosx/features/speech/</a>

### Two: Easy Access to Digital Text

Something else free. When your computers are set up do you install custom bookmarks (in Netscape/Firefox) or favorites (in Internet Explorer)? Providing library links and direct links to download sites for digital books makes it far more likely that students and staff will find what they need.

<i>Best</i>	University of Virginia	<a href="http://etext.lib.virginia.edu/ebooks/ebooklist.html">http://etext.lib.virginia.edu/ebooks/ebooklist.html</a> All kinds of books in various formats, including Microsoft Reader.
<i>Best</i>	Project Gutenberg	<a href="http://www.gutenberg.org/">http://www.gutenberg.org/</a> The ultimate meta-site for digital reading.
<i>Another</i>	Fordham University	<a href="http://www.fordham.edu/halsall/ancient/asbook.html">http://www.fordham.edu/halsall/ancient/asbook.html</a> Need historical sources? This is amazing.

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### Three: Screen Readers/Screen Magnifiers

An essential accommodation for both vision and literacy issues. This software offers seamless screen enlargement (up to 16 times) as well as screen reading in a variety of forms. Zoom-Text will even read in dozens of languages, but the two programs are almost identical.

<i>Best</i>	Zoom-Text Level 2 Plus	<a href="http://www.aisquared.com/index.htm">http://www.aisquared.com/index.htm</a>
<i>Best</i>	MAGic	<a href="http://www.freedomscientific.com/fs_products/software_magic.asp">http://www.freedomscientific.com/fs_products/software_magic.asp</a>

### Four: Ensuring that your web sites are accessible

If your school's web pages are not accessible it is exactly the same as if your building has no wheelchair ramps and no accessible restrooms. What's an accessible web site? A site that can be cleanly read by screen readers (the test is that you could get all information and navigate the site with your monitor turned off). It's not hard, it just requires attention, and if your webmaster is unwilling to build a fully accessible site, you must create a text only "mirror site" that has all the same information. If you do this, the link to the "text only" site should be the *very first thing* in the upper left hand corner of your home page, so screen readers will find it first.

<i>Test</i>	"Bobby"	<a href="http://bobby.watchfire.com/bobby/html/en/index.jsp">http://bobby.watchfire.com/bobby/html/en/index.jsp</a> Test your pages for accessibility. The report will tell you what the problems are.
<i>Start</i>	W3C	<a href="http://www.w3.org/WAI/gettingstarted/">http://www.w3.org/WAI/gettingstarted/</a> A good place to start.
<i>Library</i>	ALA	<a href="http://www.ala.org/ala/products/books/editions/adaptivetechology.htm">http://www.ala.org/ala/products/books/editions/adaptivetechology.htm</a> A detailed look at information accessibility.

### Five: "Hand-Held Reading"

This is less of an academic solution but a powerful tool for transition. Hand-held "Scan-and-Read" devices can make everything from employment to going to the doctor suddenly possible for non-readers. The Reading Pen in a pocket-size device that reads a line of text to you and can even define words. Great in machine shop work (reading job tags), delivery situations, anywhere that accurate reading of small samples is essential.

<i>The One</i>	WizCom Reading Pen II	<a href="http://www.wizcomtech.com/Wizcom/products/product_info.asp?fid=172">http://www.wizcomtech.com/Wizcom/products/product_info.asp?fid=172</a> Change a life for \$300.
<i>Plus</i>	Franklin Spellers	<a href="http://www.franklin.com/estore/details.aspx?ID=NCS-101">http://www.franklin.com/estore/details.aspx?ID=NCS-101</a> Simple, under \$20, hand-held spell correction devices.
<i>And</i>	Handheld Organization And Reading	<a href="http://welcome.hp.com/country/us/en/prodserv/handheld.html">http://welcome.hp.com/country/us/en/prodserv/handheld.html</a> The 'Pocket PC' (the Microsoft-based version of 'Palm' devices) offers Word Processing, spell-correction, day organization, and Digital Book Reading in one \$300-\$400 hand-held device. There are even full keyboards available.

## Six: Scan-and-Read Software

The strongest support for literacy comes from software that makes books fully accessible. This isn't just access to the words, it strengthens word-shape recognition, trains note-taking skills, improves spelling, offers included dictionaries, thesauruses, even word-prediction word processors. Works with downloaded digital text, publisher provided digital text, or by scanning books in manually, and may include web browsers that read as well. Nothing will change life for those with reading issues as dramatically.

<i>Best</i>	WYNN	<a href="http://www.freedomscientific.com/LSG/products/wynn.asp">http://www.freedomscientific.com/LSG/products/wynn.asp</a> The only software of this type built from the ground up for reading disabilities (not blind), easy to learn, highly intuitive, great study tools.
<i>Next</i>	Kurzweil 3000	<a href="http://www.kurzweilededu.com/">http://www.kurzweilededu.com/</a> Based on older 'blind technology' this does most of what WYNN does but cost 70% more.
<i>Other</i>	CAST e-reader  Premier	<a href="http://cast.org/udl/index.cfm?i=211">http://cast.org/udl/index.cfm?i=211</a> A simpler, less expensive version that may meet the needs of some students.  <a href="http://www.premier-programming.com/Products.htm">http://www.premier-programming.com/Products.htm</a> Most users have found this difficult to work with and less than what they need. It is "modular" (you buy the components you want), but to match the features of WYNN will make it as or more expensive. There is a cute, free, download for a talking calculator though.

## Seven: Voice-to-Text

This sounds magical, and it is when properly used. But proper use includes significant training (minimum 4-8 hours for ViaVoice, 12-24 hours for Dragon) and it simply will not work well in a noisy classroom situation. That said, it not only has uses for those who can't get the keyboard for physical or LD reasons, but may also prove effective for non-readers who will get to see the letter combinations appear as they speak words, a wondrous kind of phonological awareness training. For most students though, I'd suggest exploring alternative keyboards first.

<i>Best</i>	IBM ViaVoice	<a href="http://www-306.ibm.com/software/voice/viavoice/">http://www-306.ibm.com/software/voice/viavoice/</a> The Pro-USB edition, \$200 or less with headset and USB adapter (allowing inexpensive headset personalization), is the best choice.
<i>Next</i>	Dragon Naturally Speaking	<a href="http://www.scansoft.com/naturallyspeaking/">http://www.scansoft.com/naturallyspeaking/</a> Almost \$700 (for the version equivalent to the best ViaVoice) and much harder to train for poor readers and those with 'inconsistent' voices, but may produce higher accuracy than ViaVoice for those with very clear speech.
<i>Other</i>		No other package produces reasonably acceptable results.

## Eight: Alternative Keyboards

Your school teaches keyboarding, but which keyboard should a student use? The basic "QWERTY" keyboard is brutally confusing for many LD students, and plenty of alternatives are available, including the "Dvorak" key arrangement and the "ABC" key arrangement, as well as many variations which solve physical issues. In this age of easy USB connections every computer lab should have alternatives available, and should encourage students to investigate differences and make appropriate choices.

<i>Most Effective</i>	Dvortyboards	<a href="http://www.dvortyboards.com/">http://www.dvortyboards.com/</a> You can simply switch to Dvorak in the Control Panel of both Windows and MacO/S and then use sticker-type keycaps to change the look of any keyboard, but Dvortyboards switch back and forth, giving students a choice right from the start.
<i>Also</i>	ABC "remapper"	<a href="http://web.mit.edu/atic/www/tools/keyboardlayouts.html">http://web.mit.edu/atic/www/tools/keyboardlayouts.html</a> A software tool to rearrange the keyboard into alphabetical order.
<i>And</i>	BigKeys	<a href="http://www.bigkeys.com/html/bigkeys_1level.html">http://www.bigkeys.com/html/bigkeys_1level.html</a> Keyboards in QWERTY or ABC with inch-square keys (for dexterity issues)
<i>And</i>	Fentek Industries	<a href="http://www.fentek-ind.com/">http://www.fentek-ind.com/</a> The ultimate source for alternative keyboards.

## Nine: Writing Support

Software that supports writing comes in a wide variety of forms. The two most common are "mind mappers" that assist in organization, and "word prediction" packages that help students with spelling. The easiest are built in to Microsoft Office, including altering the settings for both Spell Check and Grammar Check to provide individually optimized support.

<i>Mind Mapping</i>	Inspiration Kidspiration	<a href="http://www.inspiration.com/">http://www.inspiration.com/</a> Inexpensive and brilliant, kids just seem to love this. Interfaces easily with Microsoft Word. There's no reason to buy anything but the general version of Inspiration, its features will work pre-K through post-college. Check out the templates for high school and college writing support.
<i>Word Prediction</i>	WordQ  Soothsayer	<a href="http://www.wordq.com/">http://www.wordq.com/</a> Word Prediction is included in software like WYNN, but if you want it separately there are a number of good alternatives. <a href="http://www.ahf-net.com/sooth.htm">http://www.ahf-net.com/sooth.htm</a>
<i>Free</i>	Microsoft Office	<a href="http://www.abilitynet.org.uk/content/factsheets/pdfs/Spelling%20and%20grammar%20options%20in%20Microsoft%20Word.pdf">http://www.abilitynet.org.uk/content/factsheets/pdfs/Spelling%20and%20grammar%20options%20in%20Microsoft%20Word.pdf</a> A nicely done explanation from the UK on how to change Spell Check and Grammar Check settings.