

Technology Tips for Differentiated Instruction

<http://www.westedrtec.org/techtips>

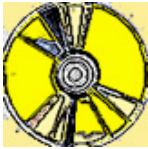
by WestEd's Regional Technology in Education Consortium (RTEC) in partnership with the Alliance for Technology Access

Current Tips:

Talking Text



Digital Text



Word Features



Enhanced Text



Portable Devices



Graphic Organizers



Technology Tips is a web site, a PowerPoint presentation, and/or hands-on staff development, customized for individual sites or districts. It's...

- focused on technologies most schools already have
- for use in professional development of technology
- for general and special educators, and staff

Differentiated Instruction

" is a model of instruction that revolves around the belief that students learn in many different ways." (Verde, 2004)

It means

- providing materials and tasks at varied levels of difficulty with varying degrees of scaffolding, through multiple instructional groups, and
- encouraging student success by varying ways in which students work: alone or collaboratively, in auditory or visual modes, or through practical or creative means. (Tomlinson, 2000)

Why differentiate instruction?

- Because not all children learn in the same way.
- Because NCLB says all children need to become proficient.
- Because research and practice demonstrate that differentiated instruction techniques are effective.
- Because we can maximize student's growth by meeting each student where he or she is and helping them progress.
- Because of the diversity of students found in today's classrooms. (ELL, disabilities, cultural backgrounds, etc.)

Technology can help you tailor instruction to meet the needs of all students by allowing changes to:

- content
- channels of input, and
- means of output.

Technology is also an excellent platform for cooperative learning.

Technology Tips for Differentiated Instruction

<http://www.westedrtec.org/techtips>

by WestEd's Regional Technology in Education Consortium (RTEC) in partnership with the Alliance for Technology Access



Talking Text

What is talking text?

- Words on the screen are read by the computer, on command.
- In some cases, the words need to be highlighted first.
 - allows reading of individual words or phrases.
 - works with word processors, websites, and more.
 - often called text-to-speech.

Who does it help?

- Students who struggle with the task of composing grammatically correct sentences;
- Those who could benefit from hearing omissions or inaccuracies in their work;
- Those who could benefit from auditory input to support reading.

What does research say?

- Developing reading comprehension is a complex skill.
- If a great deal of effort goes to sounding out words, energy for comprehension is reduced.
- Talking text can provide one more tool for supporting comprehension for some students. (Rose & Dalton, 2002)
- Many students improve editing and proofreading.
- Hearing one's own words is rewarding and motivating.
Note: You WILL need

How to provide talking text - Mac (10.3.1)

Go to Speech Preferences and choose:

- Finder menu, System Preferences, Speech, Spoken User Interfaces
- Set Key to read highlighted text (Command plus __)
- Choice of voices & rate (under Default Voice)

Macintosh (10.2 or earlier)

Download free utility called Heart

<http://www.ldresources.com/files/heartit.sea.hqx>

- Install as a control panel and restart.
- Set key combination (Hit Control plus L to hear text.)
- Works with highlighted text in any program
- Deselect text to stop the talking.

Windows XP & 2000

Best choice that works within other software, including browser.

The Universal Reader (\$29) provides a floating toolbar. Select text to be read and click on "speak" button.

<http://www.premier-programming.com/UR/Ureader.htm>

Windows 3.1 & 95

Free utility works with other software, including browser.

HELPread™ <http://www.dyslexia.com/helpread.htm>

Windows: E-Text Reader

Talking word processor for PC

- Highlights each word as read.
- Can adjust speed of reading.
- Allows zoom, colored highlighting & find.
- Allows setting bookmarks, for jumping from forward and backward.
- Opens .doc files (Microsoft Word)

Free download from <http://www.premier-programming.com>

Microsoft Reader for Windows 98 and newer

Works with eBooks that have been formatted for Reader (Many free from the University of Virginia etext site.) Books are loaded into Reader, offering control of font size, ability to annotate, and other features. <http://www.microsoft.com/reader/downloads/pc.asp>

Kidspiration

The Talking Interface reads menus, buttons, and other program elements on-screen.

- The Listen tool (Symbol of an ear) reads the words in their projects.
- The Record command (click Record on the Goodies menu) can record sounds so they can be attached to symbols or ideas to

Talking Text continued

headphones.

Benefits of talking text

- Talking text allows a student to select individual words that they may be having problems with and can support reading at a higher level.
- Emerging writers experience the connection between the spoken and written word from the writing perspective.

Thinking of Your Students...

- Who would benefit from highlighting individual words and hearing them read? Or from hearing the definition of the word read?
- Who would benefit from hearing an entire selection or article on a website read aloud?
- Who would enjoy hearing their own words read by the computer?

Example of Use

2nd graders are using the computer to conduct research on dinosaurs. They use the text-to-speech function to hear the short passages read aloud.

Students that benefit from talking text may gain access to a larger world of text through electronic books, documents, magazines, and newspapers. See the Technology Tip on Digital Text.

More examples at:
www.westedrtec.org/techtips

expand and reinforce learning. This allows a teacher to record instructions for students to use in an activity.

KidPix

Make selections under the Speech Menu

- Read Text Aloud
 - Reads text entered with the keyboard, using typewriter key
 - Text boxes will be read in order, top to bottom
- Pick a Voice
 - Dialog box with choice of voices
 - Preview to hear how each sounds
 - Click OK to select a voice

AppleWorks (Mac)

- Open a Word Processing document.
 - Highlight text and click "lips" or "text to speech" icon in the button bar.
 - If there is no "talking" icon in the tool bar:
 - . Open Preferences, Available buttons, Word Processing
 - . Drag "lips" into button bar, click "done".

AppleWorks (Windows)

Similar to Mac but if there is no "talking" icon in the tool bar, do this:

- Press the button with a triangle in the top left of the tool bar.
- Select Default *and* Visible at Start Up.
- Press the triangle button again and select Edit Button Bar.
- Select Default and Modify. From the pulldown menu, Button Categories, select Word Processing.
- Select Speak Text, a dialogue box will explain the function.
- Select Add, OK and Done.

This causes the Plain Talk button to show up on your tool bar.

Voice settings may be changed through the Speech Control Panel

StoryBook Reader Deluxe

Look for Speech under Goodies

Commercial products - Not free but can be worth the expense.

- Write OutLoud (\$99 or less) Free 30 day trial for teachers.
- IntelliTalk (\$140 or less) Download a free 45 day trial version of IntelliTalk3 to experience a full-featured talking word processor.
<http://www.intellitools.com>
- CAST eReader (\$229 or less)

These all include the following features :

- highlight sentence and word within sentence as it is read
- allow reading by letter, word, or sentence
- allow correction of pronunciation
- have other helpful features, e.g. talking dictionary

Technology Tips for Differentiated Instruction

<http://www.westedrtec.org/techtips>

by WestEd's Regional Technology in Education Consortium (RTEC) in partnership with the Alliance for Technology Access



Digital Text

What is digital text?

Text stored as strings of characters.

- If you can select and change the font of text on the computer screen, it's electronic text.
- Many books and historical documents have been converted to digital format, for access via computer.
- New writing is being done to take advantage of hyperlinking and multi-media.

Who does it help?

- Those who have trouble reading standard print from books
- Those who need additional information or supports placed immediately near the relevant text.
- Those who could benefit manipulating or interacting with the text.

Why use digital text?

- Visual display can be varied
- Auditory display - good for pre-reading
- Allows embedding learning supports in content
 - Pre-reading background, definitions
 - Summary
 - Key questions
- Allows students to copy/paste, or otherwise manipulate the text.

Free books online

- *Digital Book Libraries* (over 90 sites listed) <http://www.ditext.com/etexts.html>
- *Internet Public Library* <http://www.ipl.org/>
- *Project Gutenberg* <http://promo.net/pg/>
- *University of Virginia's e-Book Library* <http://etext.lib.virginia.edu/ebooks/ebooklist.html>
- *American Memory* at <http://memory.loc.gov/>
- Alex, (Literature & philosophy) <http://www.infomotions.com/alex/>
- The Oxford Text Archive catalog, <http://ota.ahds.ac.uk/>
- Project Bartleby has many reference books, poetry texts, and historical editions. <http://www.bartleby.com/>

Examples of free digital text by author

Dickens	Robert Frost
Mark Twain	Edgar Allan Poe
Edgar Rice Burroughs	
Jack London	Rudyard Kipling
Jane Austin	Beatrix Potter

Examples of free digital text by title

Declaration of Independence
Bulfinch's Mythology
Bartlett's Quotations
Tom Sawyer
Alice in Wonderland
Wizard of Oz
The Tell-Tale Heart
Oliver Twist
Little Women

See magazine examples at www.westedrtec.org/techtips

Almost free books online

Benetech's BookShare, <http://www.bookshare.org>
Over 12,000 titles of books still in copyright.

- Individual subscriptions enable "all-you-can-read"* access to books in easy-to-use digital formats for a full year. Subscriptions cost \$50 plus a \$25 sign-up fee the first year.
- School subscriptions also available at \$300 for 30 books.

Technology Tips for Differentiated Instruction

<http://www.westedrtec.org/techtips>

by WestEd's Regional Technology in Education Consortium (RTEC) in partnership with the Alliance for Technology Access



Word Features

There are some great features to Microsoft Word that support differentiation strategies. These include:

- Computer-generated summaries can identify essential content for students to pre-read
- Highlight text can focus on key words, themes, characterizations, main ideas
- Changing how the text looks on the screen allows user preference for font: type, size, and color.
- Adjusting the grammar checker allows the teacher to reduce frustration for students or target specific errors
- Determining the readability of text tells you the grade level for any document.

How are they used?

Auto-Summarize

- Pre-reading for meaning
- Post-reading to self-test or summarize

Highlighting Text

- Adding color to text increases the odds that the information will be stored in long-term memory and more readily recalled.
- Generally speaking, when emerging readers read, they skip over words they don't understand. Highlighting such words as they read cues them to go back later and decipher the meaning of the selection.

Changing the text display helps students who are having difficulty reading standard text on the screen.

Grammar checking can be made more appropriate to the task or grade level by checking off individual features, among the 26 options.

Readability can be used with electronic text to determine grade level, or when simplifying text.

How to Auto-Summarize

Under Tools, choose Auto-Summarize

Dialog Box gives choices on:

- % or size of summary
- Method: highlight, summary on top, etc.

How to do highlighting

Select text. Select highlighter in formatting palette.

How to change the display in Word

Preferences, General: blue

background with white text

Font: Serif or sans-serif, size, and color

How to modify the Grammar Checker

Preferences, Spelling and

Grammar, Grammar, Writing Style:

Customize grammar checking

- Casual,
- Formal, or
- Custom: 26 settings such as capitalization, contractions, passive voice, run-on sentence, etc.

How to Get Readability Statistics

Under Tools, choose Spelling,

Spelling and Grammar Dialog

box: Options button

Grammar: Show Readability Statistics

Technology Tips for Differentiated Instruction

<http://www.westedrtec.org/techtips>

by WestEd's Regional Technology in Education Consortium (RTEC) in partnership with the Alliance for Technology Access



Enhanced Text

What is enhanced text?

Think of the modern textbook. A chapter on a historical period might include:

- a timeline,
- a photograph,
- a reproduction of art featuring an important historical figure,
- a graphic of a historical document, and
- questions for reflection.

A related reader's guide for English learners might include

- definitions of difficult words,
- cultural context, and
- explanations of idioms.

Put all these types of resources into an electronic document or website, and you have the textbook of the future. Today we can find an increasing number of sources with

- Added information, questions, links, graphics, or videos to enhance comprehension
- Audio versions, in a variety of formats, that can accompany text.

Who does it help?

- Students with learning disabilities
- Students who find reading challenging
- Students who may struggle with vocabulary (LEP)
- Students who come from diverse cultures

National Reading Panel research

Techniques to enhance comprehension include:

- questions that allow self-monitoring for understanding,
- using graphic and semantic organizers,
- student-generated questions about the text,
- becoming aware of story structure, and
- periodically summarizing key points.

Strategies for enhancing text

Preview:

- background
- summary
- visual summary
- vocabulary

Reading strategies

- questions about content
- breaking down complex sentences
- making predictions

Review and assess

- compare and contrast
- story mapping

Literary analysis

- plot, mood, theme, style, point of view

Enhanced text: Sources

The Intersect Digital Library Catalog

<http://intersect.uoregon.edu/>

- The Diary of Opal Whiteley
- The Diary of Juan Bautista de Anza
- Your Genes, Your Choices: Cloning
- On the Run
- An American History Sourcebook

Spark Notes <http://www.sparknotes.com>

Example: *Harry Potter and the Chamber of Secrets*

Prentice Hall Literature website for

Timeless Voices, Timeless Themes at

<http://www.phschool.com/atschool/literature>

Technology Tips for Differentiated Instruction

<http://www.westedrtec.org/techtips>

by WestEd's Regional Technology in Education Consortium (RTEC) in partnership with the Alliance for Technology Access



Portable Word Processors

What are portable word processors?

Sturdy, lightweight units such as the AlphaSmart, DreamWriter, Palm Pilot, or Laser PC6

Why use portable word processors?

- Typing is easier than writing for some students
- Writing can be imported into other programs, for editing, enhancing, etc.
- Supports lesson plans that encourage cooperative learning
- Highly transportable

Who does it help?

- Students who struggle with paper and pencil
- Students who are motivated by technology

What does research say?

- Students' interest in writing is increased using computers, E-mates, AlphaSmarts, etc.
- Writing on computer has a positive effect on the quality of student writing.
- The biggest impact is for:
 - students with learning disabilities.
 - students in early elementary grades.

Bonus Feature: AlphaSmart with Co:Writer

Word prediction is an option on the AlphaSmart 3000: From the first letters students type, Co:Writer SmartApplet generates possibilities for the words they want. Words are based on spelling, grammar rules, context clues and vocabulary. This feature includes access to over 70 topic dictionaries which give fast access to very specific words and phrases about holidays, history, science, literature, and geography. See <http://www.donjohnston.com> for details.

Ideas for using portable word processors

Pass It On:

- Each student writes 1-2 lines of a story and then passes it on to another student, who adds another line.
- Can be done with a single device. If done with 3-4 students per word processor, divide into small groups and allow students to edit the stories, or edit as a whole group activity.

Houghton Mifflin Sentence Elaboration:

- Students are given a "seed" such as "The boat sank" or "My rabbit is nice" so that they can nurture and grow a completely mature sentence.
- Students can work alone or in groups, adding when, where, why, and creating a picture with words.

Fieldtrip Record:

- Students or adults take notes on 3-4 word processors, of what the group saw, did, and learned.
- Students can refer to these notes in writing up their experience.

Read the Room:

- Give each student a portable word processor.
- Ask them to walk around the room and type each word they see in the room that they can read. They may read any words from the walls, on boxes, from clothing, or from any other environmental print.
- Print their lists (or have students do this) with their names and the date. This provides the teacher with an ongoing assessment of their word recognition throughout the year.

More lesson plans for portable word processors can be found in *Getting the Most Out of Your AlphaSmarts*, by Janet Levenson (2003)

<http://shop.augcominc.com/osb/itemdetails.cfm/ID/254>

Technology Tips for Differentiated Instruction

<http://www.westedrtec.org/techtips>

by WestEd's Regional Technology in Education Consortium (RTEC) in partnership with the Alliance for Technology Access



Graphic Organizers

What are graphic organizers?

"...a visual representation of concepts, knowledge, or information that can incorporate both text and pictures."

Graphic organizers are particularly suited to:

- generating ideas (brain-storming, etc.)
- organizing & displaying information
- aiding learning by explicitly integrating new and old knowledge
- assessing understanding or diagnosing misunderstanding
- increasing recall
- designing a complex structure (long texts, large web sites, etc.)
- incorporating both images and text

Who do they help?

- Students who benefit from seeing relationships between information
- Students who enjoy an interactive process

What does the research say?

- Direct teaching of the thinking strategies involved in graphic organizers leads students to use them independently. (Skruggs, 1985)
- Use of graphic organizers in pre-reading helps students relate new information to their existing knowledge. (Novak & Gowin, 1984)

"Graphic organizers are valuable instructional tools. Unlike many tools that just have one purpose, graphic organizers are flexible and endless in application. One common trait found among graphic organizers is that they show the order and completeness of a student's thought process - strengths and weaknesses of understanding become clearly evident. Many graphic organizers show different aspects of an issue/problem - in close and also the big picture. Since many graphic organizers use short words or phrases, they are ideal for many types of learners, including English Language Learners with intermediate proficiency."

WriteDesign: <http://www.writedesigntonline.com/organizers/>

Types of graphic organizers

- Webs
- Concept maps
- Matrices
- Flow charts
- Venn diagrams
- Time lines
- Compare/contrast
- KWHL chart

Software

KidPix, Inspiration/Kidspiration, OmniGraffle, Microsoft Word, AppleWorks

Web Resources

1. Teachnology online GO generator:
www.teachnology.com/web_tools/graphic_org/
2. SCORE Language Arts:
<http://www.sdcoe.k12.ca.us/score/actbank/torganiz.htm>
3. Index of graphic organizers:
<http://www.graphic.org/goindex.html>
4. PDF and HTML forms:
<http://www.ocde.k12.ca.us/ctapread/5000.html>