



TECH

Top 10 Classroom Technology Strategies

Florida Instructional Technology Training & Resource Unit—FDLRS/TECH

Special points of interest:

- Quickly highlight main ideas with *Auto Summarize* & Digital Text.
- Use a cognitive organizer to help students manage curriculum content.
- Create customized keyboards with IntelliKeys.
- Use accommodations to help students with disabilities improve on the FCAT.

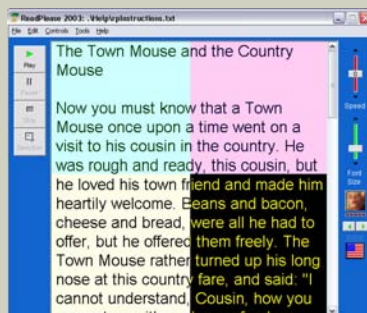
1. Digital Text

The use of digital text greatly increases the opportunities for instructional interaction between the student and the curriculum content. Using digital textbooks, students can quickly do keyword searches throughout a book or throughout a group of books, pulling together related topical information. The text can easily be highlighted or copied to support research and the use of quotes or references. Quotes, references, and other information can be placed in lists and easily sorted or reformatted.

Tools such as *Auto Summarize* in Microsoft WORD enable students to identify the key points in a passage of factual text quickly or create a summary of the main ideas. This tool can be used to help students who have problems identifying main ideas, as well as helping students pull out information bullets to use in a report such as a PowerPoint presentation. The *Auto Summarize* tool also enables teachers to make summaries of curriculum

content for students who have problems working with large amounts of text. The summaries can become a tool to give a student the overall concept of a passage of text, providing a scaffold to support the student in the curriculum area.

Students who struggle with reading or have visual problems can quickly enhance digital text to meet their needs. Foreground/background colors can be quickly changed, fonts adjusted, and word/paragraph spacing altered. Graphic enhancement, such as icon enhanced text, can also be done using a program such as *Picture It*.



2. Text-to-Speech

Text-to-speech utilities convert digital text to audio or spoken text. This technology provides support for students who are struggling readers, students who are struggling with English, and students who either need auditory support or who find audio convenient. For example, a program like *ReadingBar* will enable Internet Explorer to “read” any web page out loud. It will also record the web page to an audio file. Programs like *TextAloud* will take any passage of text and quickly convert it to a wav or mp3 audio file. Students and teachers can create CDs of curriculum material to listen to or can use a program like *iTunes* to put curriculum content on mp3 players like the Apple iPod. Imagine being able to take a chapter in social studies, quickly creating a summary of the main points using a tool such as WORD’s *Auto Summarize*, then creating an audio file of that summary and listening to it on an iPod or other mp3 player.

Advanced text-to-speech programs include sophisticated scanning features. Programs such as *Kurzweil 3000*, *WYNN*, *Accessibility Suite 3.4*, and *Read & Write Gold* scan pages of text and graphics, retain the original formatting, display the pages on a computer screen, and then read the pages out loud. Students can control the voice, rate of speech, and which sections of text they need to listen to. Some students have a much higher auditory fluency than printed text fluency and will perform better academically in an auditory setting.

New text-to-speech formats, such as *Daisy Books*, can provide recorded speech that is synchronized to digital text, giving students a natural and expressive sounding text-to-speech experience that can be used as a reading strategy in the area of prosody; the ability to read with natural sounding inflections. Prosody is an important skill that helps students chunk and focus on pieces of information to increase comprehension.

3. Talking Word Processors

Word processors enhance the development of writing skills through the ease of editing text, copy and paste tools, and ability to quickly format and reformat a passage of text. Compared to pencil and paper, these editing tools support the development of a higher level of cognitive skills than basic word construction (Peet, 2004). The addition of text-to-speech further enhances the instructional benefits of using word processors by addressing auditory language development and providing a scaffold for students who struggle with reading and writing.

By using talking word processors, students immediately hear what they are writing and are able to quickly catch mistakes. They can also have a written section read aloud as a proofing tool. The audio support engages additional cognitive processes to support learning, providing benefits over visual print writing alone. The combination of writing, quick editing, and audio output makes a powerful instructional tool.

Write:OutLoud Solo includes sophisticated text-to-speech, spell checker, homonym finders, as well as word count, sentence count, and unique word count tools. *Write:OutLoud To Go* provides a talking word processor for the *Dana* writing tool.

CAST eReader speaks digital text, HTML, and Daisy 2.02 formatted digital talking books. It highlights text being read by word, sentence, or paragraph. Two or more windows can be open at one time, supporting notes and essay writing.

Classroom Suite provides text to speech within a talking word processor, a student friendly multimedia development program, and within a mathematics program.

ReadPlease is a simple text to speech utility. While it will not speak as words are being written, it will read back text that has been written or text that has been pasted in.

Reference: Peet, W. (2004) Why, how, and for whom we need to use talking word processors. <http://www.drpeet.com/whyhow.htm>

4. Word Prediction

The writing process includes sentence structure, vocabulary, and organization skills. As skills in these areas increase, students are able to start learning to write with their own personal style. Competent writing skills are an important part of our language and society.

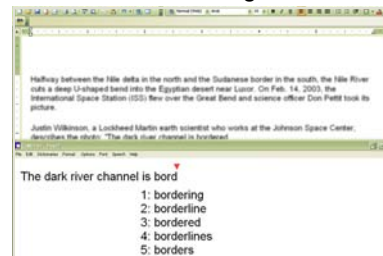
Students with disabilities and students who are at-risk can have significant problems with basic word construction that interfere with the development of higher writing organization skills. By struggling with spelling issues these students are unable to concentrate on grammar, vocabulary, and paragraph structure.

Word prediction software provides support in word selection, construction, and spelling, helping students to concentrate on the overall writing process. By monitoring what a student types letter by letter, word prediction software list words that the student may be intending to use. These predictions are based on the letters typed as well as rules of grammar. Some word prediction programs also learn new words as the student uses them and adapts to the student's own writing style.

Co:Writer adds quality linguistic word prediction to any word processor or email program. The FlexSpell feature uses thousands of phonetic spelling patterns to interpret words spelled like they sound. Custom topic dictionaries can be created to support specific instructional activities.

Classroom Suite from Intellitools provides word prediction within an excellent writing environment that includes extensive scaffolding options for a highly diverse classroom.

WordQ is another word prediction utility that works with any word processor. It also includes text-to-speech so any writing can be read out loud as it is written or afterwards as a proofing strategy.



text credit: science.nasa.gov

5. Cognitive Organizers

Students with learning disabilities may be good at solving problems but poor at describing how they came to their decisions. Their thought processes may be random in nature, jumping from thought to thought or topic to topic. These students have the ability to perform complex, integrated higher level thinking, but they need help in organizing their thoughts and making associations.

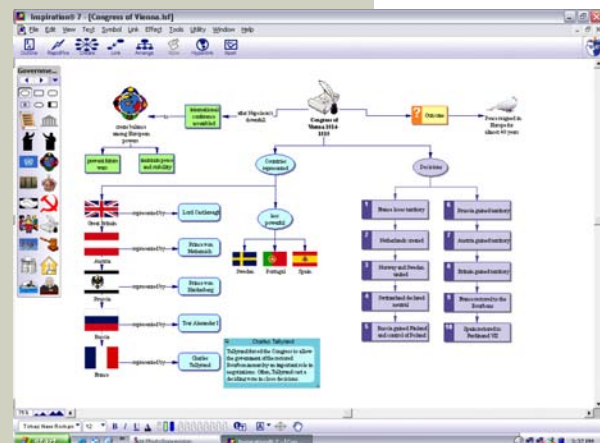
Cognitive organizers are software programs that help students create graphic representations of concepts and curriculum content so they can see the associations.

Students can also input their own random thinking and then create visual associations to help identify organized patterns.

Kidspiration and *Inspiration* are two programs that allow students to work in a free form graphic environment. Topics, notes, and images can be input as the student thinks of them, then arranged, associated, organized, and rearranged. These graphic maps can then be transferred to text based outlines for further work.

Draft:Builder includes tools to guide the writer through concept

mapping, note taking, and composition. Students are able to focus on the "big picture" of what they are writing or jump to the details.



6. Interactive Learning Environments

Academically successful students are able to engage, or interact, in learning environments and relate new information to prior knowledge. They can generalize information across domains and recognize new patterns. Students with poor academic performance often have problems making correlations to prior knowledge. They may attempt to engage in a learning activity, but there could be minimal interaction with the instructional content.

Technology can help students find their “zone of proximal development”. This is the range of effective instruction, and it is different for each student. Many software programs include assistive technologies to help students find their own interactive, instructional range.

Several programs from the Learning Company include A.D.A.P.T. Learning Technology. These programs track student progress, adjust the difficulty level, and pro-

vides help when needed. Programs from the Learning Company include the *Clue Finders Reading and Math* series as well as the *Reader Rabbit* series.

Learning Buddies software, such as *Arthur's 2nd Grade*, adapts to the student's skill level, reducing frustration and resulting in an effective and encouraging instructional experience. Several Knowledge Adventure titles, such as *Jump Start Adventures 4th Grade*, include “Adaptive Learning Technology” which adjust the skill levels as the student's skills change.

Good diagnostic software can be used by teachers and students to increase academic success by identifying the appropriate instructional zone for each student. *STAR Reading* from Accelerated Reader is a diagnostic tool that adjusts the questions based on student responses. If a student gets a question correctly then the next question is more difficult. If the student misses a question then the next

question is easier. *Let's Go Learn* is another reading diagnostic and intervention program that self-adjusts assessment questions based on student responses. The *Unique Reader* module then provides student specific interventions.

Another technology that increases student interaction with instruction is an interactive expert system. *MathXpert* is an example of this type of program. Students can enter a math equation and then get step by step hints of how to solve it. Complete solutions with all steps explained are also available. *WebMath* is an Internet based service that students can use to get help in solving a wide variety of math problems, from K-8 math to calculus.

Many types of simulations also increase interaction through the exploration process. Software like the *Virtual Labs* enable students to problem solve, explore, and make “smart” mistakes, a highly interactive learning experience.

7. Effective Reading Software

For students struggling with reading, technology can help in the areas of phonemic awareness, phonics, fluency, vocabulary, and comprehension, as well as auditory processing. Following are only a few examples.

Earobics is a research based supplemental program. It provides intervention for students who have auditory processing or attention deficit disorders, struggle with language based learning disabilities, or have dyslexia or hearing impairments.

Sound Reading Solutions is based on neurological and linguistic studies of dyslexic and fluent readers. It provides activities which target phonemic awareness, phonological decoding, and language flexibility.

Soliloquy listens to students as they read the stories on the computer screen and corrects them if they make mistakes pronouncing the words. It will also prompt them if they pause and will mark problem words for additional instruction.

Thinking Reader uses research based strategies to increase comprehension skills including summarizing, clarifying, visualizing, reflecting, questioning, predicting, and feeling.

8. Internet Access

The World Wide Web includes some amazing tools to help students achieve academic success. The search engine *Google* will not only do topical or keyword searches on the Internet, but it also includes a built in calculator that will solve math problems and do units of conversion. A built in dictionary will give the definition of any word when you type “define” in front of it in *Google*. *Google's* language tools will translate any web page from one language to another.

Online libraries like *Questia* provide 24/7 access to searchable books and periodicals, along with tools for highlighting text, book marking, writing in the margins, and tools to create bibliographies quickly. When used with a text-to-speech enabled browser, these books can be read out loud by the computer.

Online survey tools like *Survey Monkey* enable teachers to create single choice, multiple choice, essay, and rating scale based tests that students can complete online with all the results compiled into one spreadsheet. When a text-to-speech enabled browser is used, the students can have the computer read the test questions out loud as well as have their responses read out loud for verification. These types of tests can also be a great study tool for students at home.



**Florida Instructional
Technology Training &
Resource Unit—
FDLRS/TECH**

**David Davis
FDLRS/TECH
Panhandle Area Educational
Consortium
753 West Blvd.
Chipley, FL 32428**

Tel: 1-877-873-7232 (ext. 2242)

Fax: 850-638-6142

E-mail: david@fdlrstech.com

Web: www.fdlrstech.com

Web: www.fdlrs.com

9. Alternative Keyboards

Some students have problems using a regular keyboard. Adjusting various keyboard features, such as StickyKeys (the student can press combination keystrokes one key at a time) FilterKeys (the student can hold a key down and the key will not keep repeating) or ToggleKeys (the computer makes a tone when a toggle key is pressed) can often help students who type slowly or who type with one finger.

Sometimes a different keyboard may be needed. The student may need larger keys. The *BigKeys* keyboard provides enlarged keys with high contrast print on each key. Large trackballs can also be beneficial for students with fine motor problems.

If more customization is needed, a keyboard such as the *IntelliKeys* could be used. The *IntelliKeys* is an extremely customizable keyboard that comes with several types of overlays. Additional overlays can be created using the program *Overlay Maker*. Overlays can include mouse controls, giving students an alternative to using a mouse. For students struggling with reading and writing, the keys on the overlay can be limited to the target letters used in an instructional activity.

Onscreen keyboards enable students to input text using a mouse, trackball, stylus, or mouse emulator system such as a switch control interface. Onscreen keyboards are available on regular PCs, tablet PCs, and hand-held devices.



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10. FCAT Accommodations

Many students with disabilities benefit from the use of accommodations in the classroom that they can continue to use when taking the FCAT. Here are only a few examples of allowable FCAT accommodations.

Presentation accommodations can include Braille versions of the test, the use of color transparencies, altered spacing of items, visual navigation cues, tabbed pages, highlighter tape to assist in focus, and auditory accommodations such as reading and signing, except for the reading items.

Responding accommodations can include written, signed, and verbal responses; dictation to a proctor; text-to-speech technology to indicate answers; switch systems; alternate keyboards to generate letters or words; pointing devices; communication devices; and math grids.

Scheduling accommodations can include the time of day a test is taken, break schedules, and extended time.

Setting accommodations can include special lighting, adapted furniture, special acoustics, the use of an FM sound amplification system, noise buffers, reduction of distractions, and administration of the test in a familiar setting.

Assistive devices allowed include alternate keyboards, adapted calculators (such as having large numbers or speech output), non-sentence based devices for oral or written responses, visual magnification devices, and auditory amplification devices.

All accommodations used must also have been used as a part of the student's general instructional methodology. No accommodations can be used that would interfere with the validity of the FCAT.

For more information, go to <http://www.firn.edu/doe/commhome/fcatasd.htm> to view a complete list of allowable FCAT accommodations.