

Assistive Technology for Students with Low Vision

Belinda Ruding MEd
VI Assistive Technology Consultant
Region 10 ESC

Agenda

- 9:00-9:30 Introductions & Website Walkthrough
- 9:30-10:00 The Basics
- 10:00-10:30 The Problems
- 10:30-10:45 Break
- 10:45-11:30 Strategies for moving forward
- 11:30-12:00 Questions & Final Thoughts



No Vision vs Low Vision

No Vision

- Technology is more complicated
- Students have to use available technology
- Teachers/Staff are very aware that student has a visual impairment

Low Vision

- Technology is more intuitive
- Students are resistant to use available technology
- Teachers/Staff have little to no idea the degree to which a student has a visual impairment

The Basics

- Dedicated Magnification Devices
- Computer Use
- Digital Audio Media

Dedicated Magnification Devices

- Low Vision devices
- Desktop CCTVs
- Portable CCTVs
- Luggable CCTVs: near/distance
- Cameras+Software/Applications+Computer/Tablet

Low Vision Devices

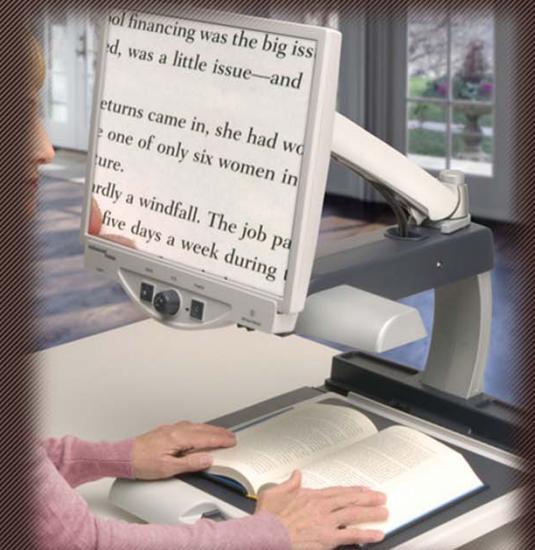
- Dome Magnifier
 - Handheld Magnifier
 - Stand Magnifier (Hands Free)
 - Full Page Magnifier
 - Loupe Magnifier
 - Visual Tracking Magnifier
 - Bar Magnifier



A magnifying glass with a blue frame is positioned over the text 'the lazy dog'. The text is highlighted with a thick blue border. The background consists of the same text repeated multiple times, creating a pattern. The magnifying glass is centered on the word 'the' in the first instance of the text.

Desktop CCTVs

- Typically dedicated to one room, but can be moved on a cart
- Many manufacturers
- Many options
 - B&W or color
 - High Definition
 - Range of magnification levels
 - Optional text to speech
 - High contrast
 - Ability to save images



“Luggable” CCTVs

- Most provide swiveling cameras for near & distance
- Easier to transport class to class
- Most popular in our area: Freedom Scientific Onyx, Enhanced Vision Acrobat
- New Mini-Models:
 - Ash Liberty Scholar 2
 - Enhanced Vision Acrobat-Mini



Portable CCTVs

- Portable is always good
- Students are frequently more willing to use smaller, less conspicuous devices
- Variety of vendors
- Many options
 - Size
 - Magnification level
 - Battery type
 - Color options



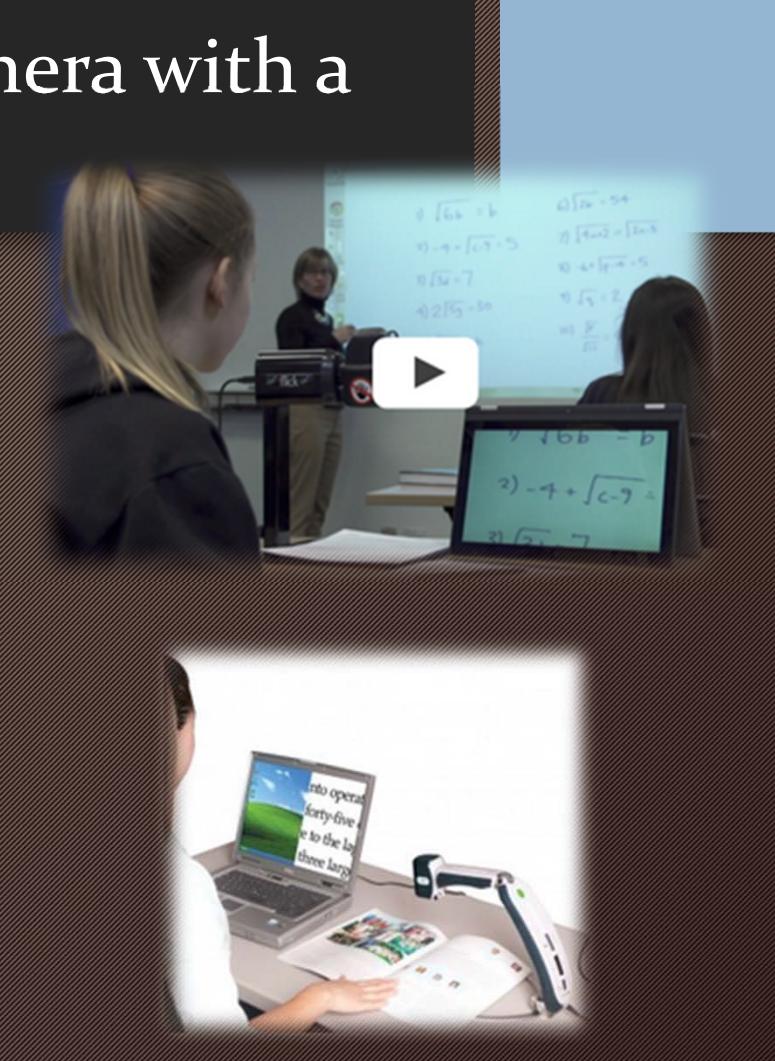
Hybrid Options

- Humanware Prodigy Duo
 - Combo desktop CCTV+Portable CCTV
 - Store saved images and take on-the-go
 - Text to Speech
 - Does not have a distance option
- Enhanced Vision DaVinci
 - Luggable CCTV with near/distance camera
 - Text to Speech
 - iPad connection



Modular Systems: Combining a camera with a computer or tablet

- HIMS E-bot
- Enhanced Vision Transformer
- Flick Camera
- Many others...



Computer Use

- Screen Magnification
 - Built-in options (Mac, Windows)
 - Zoomtext (Express, Magnifier+Reader)
 - MAGic
- Supplemental Screen Readers
- Keyboarding instruction
- Key command introduction

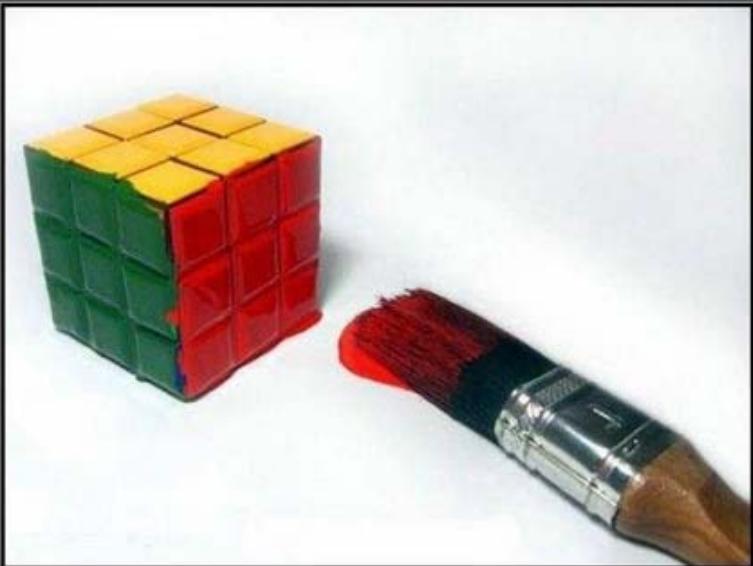
Digital Audio Media

VI-Specific Options

- Sources:
 - Bookshare
 - NLS BARD
 - Learning Ally
- Devices:
 - Victor Reader Stream (Humanware)
 - Bookport Plus (APH)
 - Tablet applications
 - Freeware for computer use

Mainstream Options

- Audible
- Audiobooks.com
- Librivox.com
- Individual commercial titles
- Scribd
- Kindle app+iPad+Voiceover
- Project Gutenberg+iBooks+Voiceover



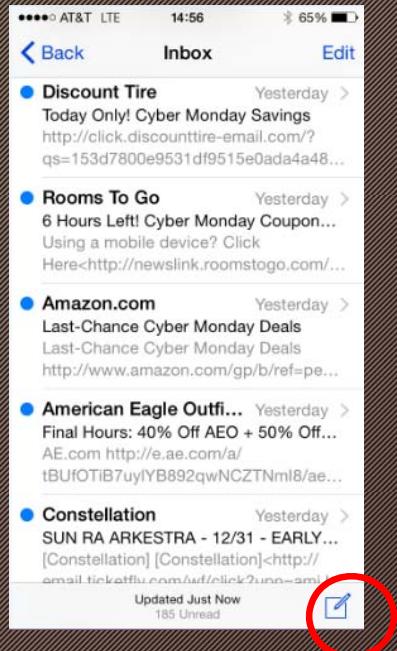
There are solutions:
even to the hardest problems

The Problems

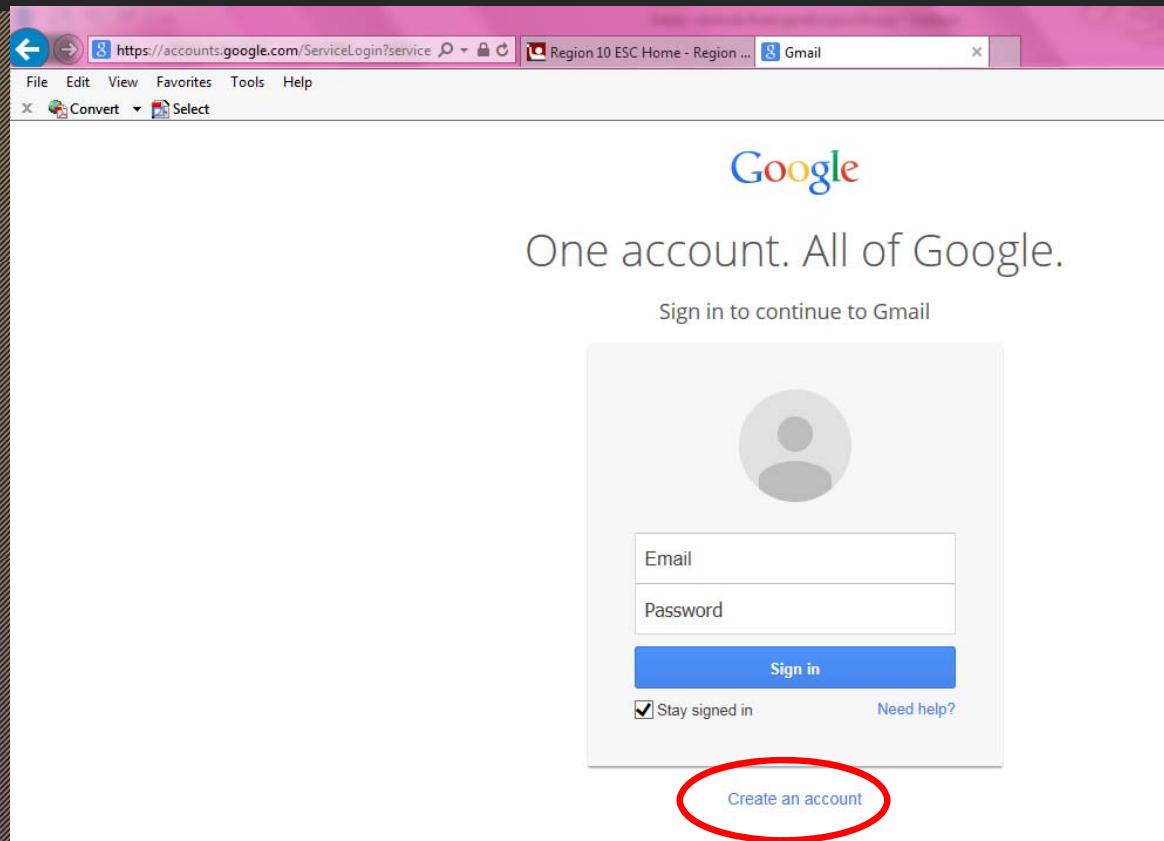
Problem #1: They don't know what they can't see

- Missing pieces of the environment: non-existent pictures on the wall, tiny invisible icons
- Social cues: a friend is reaching out for a high five
- Missing the full picture: the Gestalt of a graph, chart, diagram in its entirety

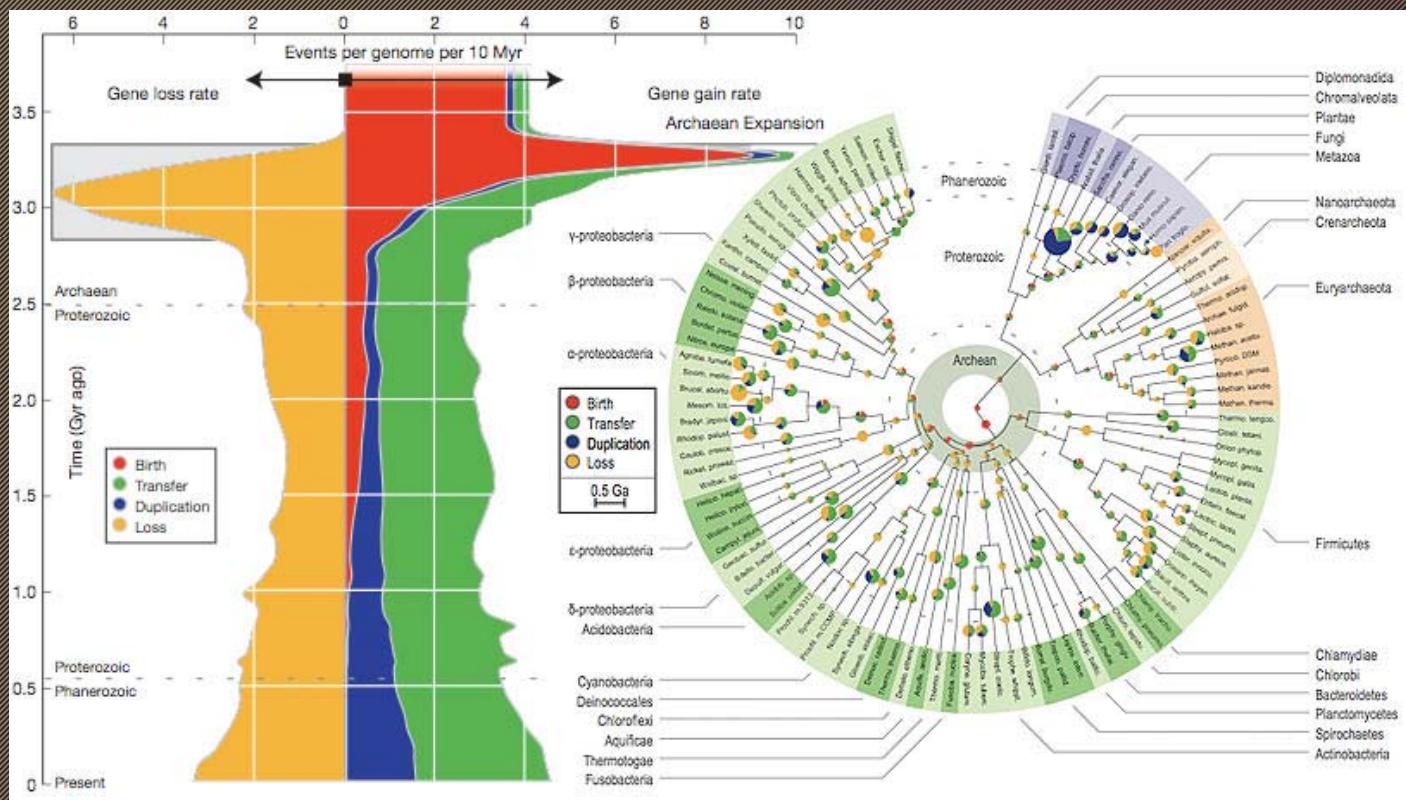
How do you send an email from an iPhone?



How do you create a new email account?



“Just use your CCTV....”



Problem #2: They don't want to look different

- They want to hide their visual impairments...and often they can
- The older they are, the worse this becomes...
- Large print vs. devices
- Mainstream vs. VI specific devices



Large Print vs. Regular Print + Magnification Devices

Large Print:

- More planning & preparation for teachers
- Cheap
- Will not be available at universities or most workplaces
- Delays fluent use of magnification devices
- LP Textbooks do not have color & are bulky
- LP standardized tests are not very large print (usually 14 pt. max)

Regular Print + Magnification Devices:

- No work for teachers
- One time cost of device purchase
- Will be the option once student enters the world of university or the workplace

Mainstream vs. VI Specific Devices

VI Specific

- Targeted toward VI population
- Allow for bookmarks & levels
- Not immediately well received by users
- Sometimes more expensive

Mainstream

- Easily accepted
- Frequently cheaper
- Not created with accessibility necessarily in mind

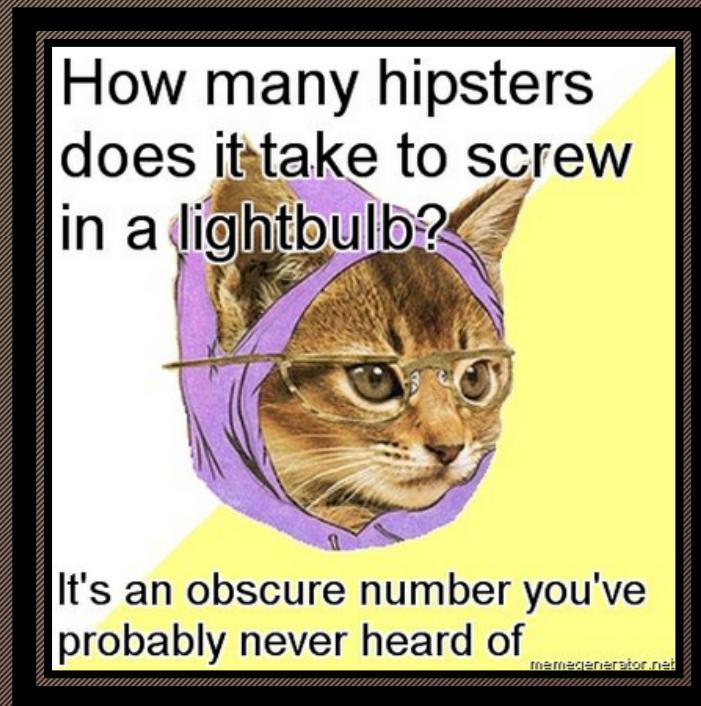
Problem #3: Their teachers don't realize they don't see...

- The students don't seem different, so the teachers don't consistently provide accommodations
- The students have a vested interest in not standing out, so they reinforce the teacher's actions
- It is a vicious cycle!

Problem #4: They persist in inefficient use of computers



Problem #5: Teamwork (See problems #1 & #3)



Strategies for Moving Forward

- Step 1: You must address the problem of device usage
- Step 2: Your student must compensate for vision issues by becoming hyper-efficient at technology use
- Step 3: Together, consider additional ways to use assistive technology

Addressing it

- You have GOT to consider the psychological/behavioral component
- Build rapport-each student is different
- Do not engage in power struggles, but don't stop trying to push your agenda
- Indoctrinate YOUNG
- Create positive associations
- Avoid a stalemate; always keep the dialogue open

Approaches to consider

- Sales & Marketing
- Verbal Aikido
- Montessori philosophy
- Fluency instruction
- Make it fun
- Compromise

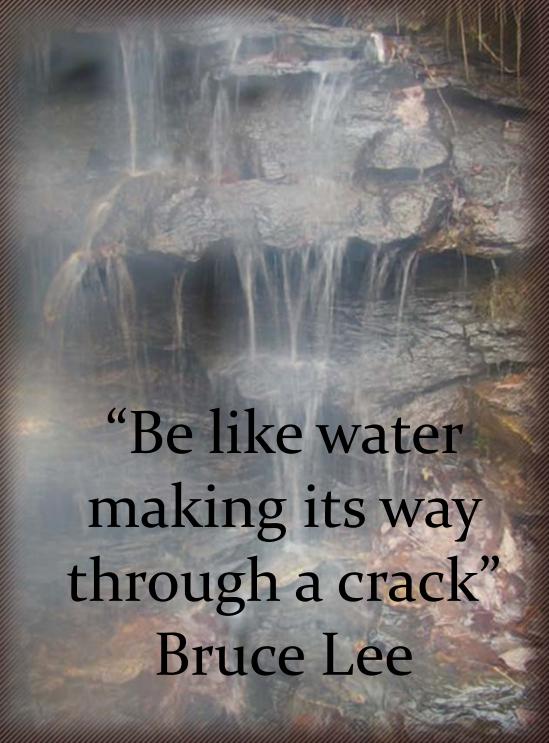
Sales & Marketing Approach

- Do not assume that the problem the person communicates is the real problem
- “The initial goal is to find out why, and under what circumstances, the prospect will buy from you. Asking questions comes first, and sharing your materials and specifics comes next.”
- “People don’t buy simply on your say-so. A prospect must go through a period of self-discovery before making the decision that your product or service is the right solution. Resistance is pre-programmed and people don’t like to be told what to do (or buy). A better approach than “selling by telling” is to ask key questions or relate third-party stories that allow the prospect to *discover* the benefits and advantages of your product or services. When you ask questions that lead to a discovery, the prospect then “owns” the discovery and the resistance disappears. After all, people don’t tend to argue with their own data. ”

Retrieved from: <http://www.forbes.com/sites/kathycaprino/2013/05/03/10-essential-selling-principles-most-salespeople-get-wrong/>

Verbal Aikido Approach

- Accept the attack without offering resistance
- An attack is an opportunity
- Turn and look from their point of view
- Take a chance to step away and re-center yourself
- Synchronize yourself with them
- Don't add more energy to the conflict



“Be like water
making its way
through a crack”
Bruce Lee

Montessori philosophy

- Student choice from within a prescribed range of options
- A constructivist/discovery model, where students learn from working with materials, rather than direct instruction

Retrieved from:

http://en.wikipedia.org/wiki/Montessori_education#Montessori_education_practices

Fluency Instruction

- Set goals
- Provide incentives!
- Practice until automaticity—you will know they are done when you no longer see them ‘fishing’ the desktop or internet

Fun with Low Vision Devices

- Home-school example
- Students need to use devices from a young, young age!

The art of compromise

- What can they do on the down-low, using mainstream devices?
- What self advocacy skills are non-negotiable?

Compensating for low vision through hyper-efficient technology use

- Mouse vs. Key Commands
 - Only teach a few key commands at a time, and practice them to absolute automaticity
 - Find silly ways to make it fun
 - Bribery is not out of the question
- Email, Calendar, Reminders
- Integrate multiple devices
- Think on a spectrum from accessibility to maximum efficiency & productivity



TSBVI EVALS kit example:

GENERAL WINDOWS COMMANDS

- | | Pre-test
Cs | Post-test
New Cs |
|--|----------------|---------------------|
| A. Software specific help file (F1) | | |
| B. Context specific help (shift F1) | | |
| C. Launch applications from the desktop | | |
| D. Launch applications from the Start menu | | |
| E. Launch applications using shortcut keys | | |
| F. Exit active application (ALT + F4) | | |
| G. Minimize windows (ALT + Space +N) | | |
| H. Minimize all applications (Windows key + M) | | |
| I. Switch between applications (ALT + Tab) | | |
| J. Move between items on task bar - hold down ALT press Tab, Tablift both keys to make a selection | | |

	Pre-test Cs	Post-test New Cs
A. Software specific help file (F1)		
B. Context specific help (shift F1)		
C. Launch applications from the desktop		
D. Launch applications from the Start menu		
E. Launch applications using shortcut keys		
F. Exit active application (ALT + F4)		
G. Minimize windows (ALT + Space +N)		
H. Minimize all applications (Windows key + M)		
I. Switch between applications (ALT + Tab)		
J. Move between items on task bar - hold down ALT press Tab, Tablift both keys to make a selection		

Section 2: Low Vision Technology

Functional Computer Use

Zoomtext: More than just a big, green cursor!

Feature list:

http://www.aisquared.com/zoomtext/more/feature_set#MagReader

Software with additional options

- Kurzweil
- <http://www.kurzweiledu.com/default.html>
- Read & Write Gold
- <http://www.texthelp.com/north-america/our-products/readwrite>

Extract & Read Options for the Interwebs

- Browsers
 - Remove clutter and advertisements
- Extractors
 - Extract text to read in a separate space, clean and clutterless
- Readability (Chrome extension, tablet app)
- Dolphin/Puffin
- ER Browser

Give visual graphics the same consideration as *tactile* graphics: bigger is not always better...

- Consider the true PURPOSE of the image, and how to best convey the same information
- Example: periodic table (make a huge one, or create a database/spreadsheet with the same information)

Google Chrome Accessibility

- Chrome Extensions
 - ChromeVox
 - ChromeVis
 - Readability
 - SpeechPad
 - Read & Write for Google
- Chrome Themes

Cloud storage

- Why?
 - Access materials on computer or tablet, anytime, anywhere (wifi needed)
 - Replaces a flashdrive, and MUCH harder to lose
 - Easily exchange documents with teachers, family, friends
- Options:
 - Dropbox
 - Google Drive
 - OneDrive

Apps: iPhone

- Penultimate+Evernote+Skitch
- Voice Dream Reader(also, Learning Ally Audio, Read2Go, BARD)
- ZoomReader (from the makers of ZoomText)
- Interactive Whiteboard apps (JoinMe, Splashtop, Doceri)
- KNFB Reader
-

So amazing, it deserves its own slide...

Voice Dream Reader Reading For Everyone

- Demo
- Working on an Android version
- Working on Voice Dream Writer



 Download on the
App Store



Apps: Android

- Voice Search
- BIG Launcher
- GoRead
- Opera Browser for Android
- Magnifying glass
- Dolphin Browser HD
- GuardMyAngel

In Summary:

- Indoctrinate YOUNG
- Create positive associations with device use
- When students resist, be “like water making its way through a crack:” don’t get in a stalemate, & keep the dialogue open. Allow them to discover that they need
- Teach your students to compensate for vision loss through technology—the “secret weapon”
- Try something new, together~