Using Technology to **Enhance Reading** Comprehension for presentation: tinyurl.com/techreadingcomp

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About these slides

Slides are available online at:

tinyurl.com/techreadingcomp

You are encouraged to view these slides digitally, so you can easily click on the numerous links throughout. Nonetheless, all links are listed on the last few slides.

(For privacy reasons, some links were for the presentation, only, so these have been replaced by screen shots)

Overview/Objectives

- 1. Introduction (Technology, Research)
- 2. Frameworks of Reading Comprehension
- 3. Interactive part!

4. Resources

Neuroscience & Education

- Motivation is linked to increased persistence, performance, & recall ("just right challenge" motivates; as cited in Willis, 2014)
- Students with reading disabilities <u>benefit from multisensory</u> input (Birsh, J. R. (Ed) 2005, Carreker, S. & Birsh, J.R., 2005)
- Cognitive Load and <u>the positive effects of practice</u>: when using working memory, left inferior frontal gyrus employed, but as activities become more automatic, moves to left angular gyrus (Diamond et al.)
- <u>Visualizing</u> an item has the same neural effect as seeing it (Kosslyn, S.M., 2005)
- <u>Making connections</u> to new things creates activity in the left inferior prefrontal cortex (Fletcher, P.C., Stephenson, C.M.E., Carpenter, T,A., Donovan, T. and Bullmore E.T., 2003)

Technology and reading disabilities/at-risk readers

- Technology enhances literacy capabilities of students with special needs; positive correl (Goetze & Walker, 2004).
- Speech recognition software helps students' reading comprehension (Raskind & Higgins, 1999)
- "Elkind, Black, and Murray (1996) and Elkind, Cohen, and Murray (1992, 1993) showed improved reading speed and comprehension using speech synthesis/optical character recognition systems" (Raskind & Higgins, 1999)
- Positive correlation of computer intervention on reading (Foster, Erickson, Foster, Brinkman, and Torgesen 1994; Olson and Wise 1992; Torgesen 1993; Torgesen, Waters, Cohen, and Torgesen 1988)
- Technology as an assistive tool for acquiring better literacy/reading skills FIsher & Molebash (2003), Speaker (2004)
- Computers assisted in reading fluency gains (Torgensen & Barker, 2005)

Why Technology?

Enhancement

Redefinition Tech allows for the creation of new tasks, previously inconceivable

Modification Tech allows for significant task redesign Transformation

Augmentation Tech acts as a direct tool substitute, with

functional improvement

Substitution Tech acts as a direct tool substitute, with no functional change

Ruben R. Puentedura, As We May Teach: Educational Technology, From Theory Into Practice. (2009)

The SAMR model by Dr. Ruben Puentedura

Six Areas of Reading Comprehension

- 1. Activating Prior Knowledge(Making connections)/Predicting
- 2. Questioning
- 3. Visualizing
- 4. Monitoring, Clarifying, Fix Up
- 5. Drawing Inferences
- 6. Summarizing/Retelling

From Improving Reading Comprehension K-3

NCEE 2010-4038 U.S. DEPARTMENT OF EDUCATION



Systems of Strategic Actions

Thinking Within the Text	 Solving Words Monitoring & Correcting Searching for and Using Information Summarizing Maintaining Fluency Adjusting
Thinking Beyond the Text	 Prediction Making Connections (personal, world, text) Synthesizing Inferring
Thinking About the Text	AnalyzingCritiquing

Source: Pinnell, G.S. & Fountas, I.C. (2011). Continuum of Literacy Learning, Grades 3-8. Portsmouth, NH: Heinemann.

All Genres

- narratives
 - \circ stories, short stories
- informational/expository texts
 - reports, articles, books, brochures, encyclopedic websites, etc.
- poetry
- persuasive texts
 - o articles, editorials, essays, advertisements, etc.

Input/Output

Input (process)

- reading fluency
- vocabulary
- content/schema knowledge
- intra-text analyses
- input medium/media

Output (product)

- diverse types of writing
- speaking
- artistic: visuals, music, dance, etc.

Presentation Order

- 1. Reading fluency
- 2. Differentiating Input
- 3. Visualizing
- 4. Summarizing
- 5. Questioning
- 6. Making Connections
- 7. Research
- 8. Vocabulary

Reading fluency

- Audio books (<u>audible.com</u>, <u>librivox.com</u>, <u>learningally</u>. <u>com</u>)
- Tablet readers (especially <u>Whispersync</u>)
- Any text-to-speech (browser extensions and accessibility options available on all operating systems
- OCR's (including <u>www.free-ocr.com</u>)
- Web Extension: Speak It! (for Chrome)
- Chromebook: https://support.google.com/chromebook/answer/177893?hl=en
- Mac: http://www.apple.com/accessibility/osx/
- Windows: http://support.microsoft.com/kb/306902

Multimodality

visual

- slideshow accompaniment (<u>Gift of the Magi</u>)
- animation (Sarah Sylvia Cynthia Stout)
- o social media (e.g. instagram & Ukraine)
- auditory
 - auditory accompaniment only (see previous slide & youtube.com)
- kinesthetic
 - will return to at "research" (highlighting, underlining) and "making connections" (graphic organizers, categorizing)

Differentiating Input

"Harder books won't foster the growth of content learning" -Allington, 2002

(Other research that supports differentiated texts, along with other reading instruction: Allington & Johnston, 2002; Langer, 2001; Nystrand, 1997; Pressley, Allington, Wharton-McDonald, Block, & Morrow, 2001)

• Levels vs. lexiles

• Other ways of assessing your text: <u>Readability Score</u>, <u>Lexile Analyzer</u> (not very user-friendly)

Differentiating Input

Current events (nonfiction texts)

Newsela.com

Differentiating input

- Google Sites (see "Resources" for how to build a Google Site)
- 5th grade class studying Medieval Times Goals:
- to read & answer comprehension questions about Medieval Times (*but needed to be at different levels!*)
- to demonstrate expertise about 1 facet of Medieval Society & represent that knowledge multi-modally (written and visually)

Differentiating Input

Medieval Google Site

Castles: most difficult (most writing, more inference in questions, not as many visuals, more links)

Clothing: relatively easiest (more visuals than text, questions more direct, and requires graphic organizing & minimal writing)

Differentiating Input: Google Site

HOME CASTLES CLOISTERS CLOTHING FOOD WEAPONS SITEMAP

Castles

Castles: Since the power and security of a lord depended upon his ability to defend himself, fief owners began to build sturdy castles. Castles were designed to withstand a siege and to mount a defense.

At first castles were made of wood. But they were too easy to burn down. By 1100 CE, castles were built of stone. Thick walls surrounded a castle. Inside these thick walls, there were many buildings.

At the first sign of trouble, the commoners rushed to get inside the castle walls before the gates closed and shut them out.

Location: Castles were usually built on top of a hill, if one was handy. That way, the lookout guards could more easily spot attackers approaching.

Mini-assignment 1:

Click here to check out other castles 1. Look at at least 5 castles 2. What do all of the castles have in common? (how they look? what they Write a paragraph about your observations...

Mini-assignment 2:

Click here to look at the different parts of castles. • Pick 3 parts of the castle. For *each*: 1. Label it 2. Draw it 3. Describe what it was for

More information below:

The Moat: A moat was built around many of the castles. This was a deep ditch surrounding the castle walls, filled with water. A bridge was built to cross the moat. The bridge was raised during an attack. The moat was loaded with traps and sharp spikes in case someone tried to swim across.

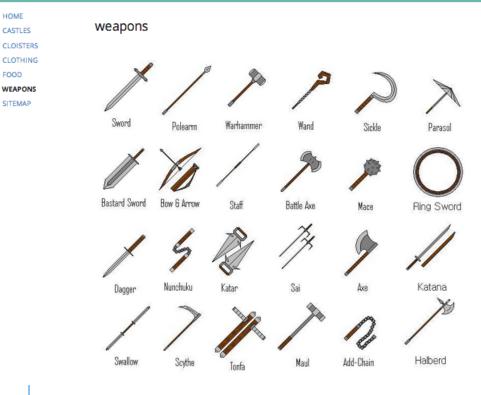
The Drawbridge: The drawbridge was the bridge built across the moat. This bridge could be raised and lowered for added protection from intruders.

The Keep: One of the largest spaces behind the thick walls was the keep. The keep was a storage area topped by a huge square tower with slotted windows for castle archers to use. The keep stored food, wine, and grain in case of siege.

The Barracks: Other buildings made up the barracks. the barracks were the homes of the knights and their families.

The Great Hall: The Great Hall was a passageway

Differentiating Input: Google Site



Assignment

Click on this link and <u>choose 3 weapons</u>. For *each*: 1. Sketch an image of the weapon 2. Describe what the weapon was used for 3. Describe how the weapon was made, and by whom (if relevant) 3. Describe any current weapons that the weapon influenced (what does it remind you of?) 4. Design a weapon that is inspired by your weapon. Draw it & explain what it can dol

Intro



Credit: public domain

non neupons enangea nanar

Medieval weapons may look decidedly lowtech today, but back in the day they represented state-of-the-arth battle gear that determined the fate of nations and changed the face of warfare.

The tools and scale of battle may have changed, but the fundamentals have not. It was and is a grim, gritty business. And at the end of the day, the results are pretty much the same.

The concept of an arms race is likewise no Johnnie-come-lately. Even back in the days of knights, casties and what passed for chivalry the name of the game was escalation. The dark side of the grail quest was trying to find new ways to wreak mayhem and get a leg up on your enemy.

Here's a tour of the best and brightest weaponry the Dark Ages had to offer.

Assignment

Click on this link, and describe trends that you notice. Write a 5 paragraph essay about how medieval weapons changed warfare. Did they change strategy? Amount of fighters? Influence current weapons?

How weapons changed warfare

Differentiating Input: Google Site

Clothing

CLOISTERS CLOTHING

HOME

CASTLES

FOOD

WEAPONS SITEMAP

ost people in the Middle Ages wore woolen

clothing, with undergarments made of linen. Brighter colors, better materials, and a longer



Cap, coif, turban... What sort of hat would you have worn in medieval times? jacket length were usually signs of greater wealth. The clothing of the aristocracy and wealthy merchants tended to be elaborate and changed according to the dictates of fashion. Towards the end of the Middle Ages, men of

the wealthy classes sported hose and a jacket, often with pleating or skirting, or a tunic with a surcoat. Women wore flowing gowns and elaborate headwear, ranging from headdresses shaped like hearts or butterflies to tall steeple caps and Italian turbans.

Most of the holy orders wore long woolen habits in emulation of Roman clothing. One could tell the order by the color of the habit: the Benedictines wore black; the Cistercians, undyed wool or white. St. Benedict stated that a monk's clothes should be plain but comfortable and they were allowed to wear linen coifs to keep their heads warm. The Poor Clare Sisters, an order of Franciscan nuns, had to petition the Pope in order to be permitted to wear woolen socks.

Click here to take a quiz about Medieval Hats!

Clothing for peasants:





Clothing of knights and the wealthy:



Visualizing

- Institute of Educational Science (IES)
- Goetze & Walker, 2004
- "Multimedia can be used to represent the content knowledge in ways that mesh with different learning styles that may appeal to different modal preferences" (Birch & Sankey, 2008; Moreno & Mayer, 2007, as cited in Birch, Snakey, & Gardiner, 2010)

Visualizing

- Clipart/Google Image Search
 fiction
 - non-fiction
 - can be for plot (summarizing) and/or visualizing characters, settings, etc. But also inference, predicting, etc. These can be put in folders or displayed in the classroom

Visualizing

- cast the movie & go to <u>imdb.com</u> to find those images; extension project: make a movie poster for the book (<u>Okay For Now movie poster</u>)
- bring in photographs or pictures of potential sets
- graphic design (<u>pixlr.com</u>, or <u>Sketchbook X</u> or <u>Sketchbook Pro</u> for iPad)
- You try! The Giver movie (it's happening...) (popular on imdb link)

Today's teachers need to recognize the importance of visual literacy for the children of the technology generation. Visual literacy involves being able to interpret the meaning of visual images as well as being able to construct effective visuals in order to convey ideas to others. The union of reading and technology on the Internet is causing educators to take a new look at what it means to be literate in today's world (Leu, 2002; Leu & Kinzer, 2000). These new forms of literacy call upon students to know how to read in both the print world *and* the digital world (Schmar-Dobler, 2003).

from Giles & Cook (2003)

Summarizing & Schema Instruction

- Explicitly teach the different parts of a story (WWW+ why? + how?), or story elements
- Use short, silent movies & have students summarize it in words
 - A few of my favorites: (younger -> older students)
 - You try! Oktopodi
 - <u>Life</u> (has ads)
 - o <u>Alma</u>
 - <u>Paper Man</u>

Make their own slideshows~

- o <u>storybird</u>
- o <u>animoto</u>
- o <u>photopeach</u>
- o tout, Vine, Instagram
- <u>ThingLink</u> (for iPad)
- For schools that have animation- have students make animations

- instagram, tout, vine, etc. for demonstrating knowledge (and learning)
- Photopeach No Talking

What's the main idea?

 Provide a list of words to highlight (they can use the find feature to find all of these). This teaches them which words are "clue words" for important ideas

* a major event

- * important to note
- * most of all

- * above all
 - * key feature
- * principal item
- * central issue

SOME SIGNAL WORDS AND PHRASES

- * most importantly
- * should be noted
- * especially valuable
- * most noteworthy
- * remember that

(from Florida Center for Reading Research; fcrr.org)

Ancient Egypt main idea Google Drive (& You

try)

Questioning & Monitoring

- Model internal monologue of "Good Readers" (<u>https:</u> //www.screencast.com/, <u>http://www.screencast-o-</u> matic.com/) Example from Raymond's Run
- Good Readers ask themselves questions
 - about content
 - about their understanding
- Make this a part of their process!
- As always: fade prompts (<u>Google Drive of Questions on</u> <u>Folk Tale</u>)

Questioning & Monitoring

The Lion and the Beetle

Lion was very proud and very vain. He loved to stomp around the savannah, roaring and growling whenever he saw his animal subjects - Giraffe or Hyena or Elephant or Gazelle or Ape - to show what a mighty Lion he was.

"I am a Very Mighty King!" he roared. And his subjects all bowed low before him. One day, Lion looked into the mirror-like waters of the lake. He was struck by his own greatness. What a beautiful and noble creature I am, he thought.

"I am a Very Mighty King!" he roared. "I am a Very Mighty King!"

Lion preened and posed and pranced in front of the glassy lake for hours, admiring his greatness. Finally, Lion said: "I will show my devoted subjects that their leader is every inch a King."

Lion put on his fancy robes, his jeweled crown, and all his gold and silver medals. His clothes were very heavy, but they made him look mighty and grand.

"I am a Very Mighty King!" he roared in delight. "I am a Very Mighty King!" Lion sent out a message to all his animal subjects - to Giraffe and Hyena and Elephant and Gazelle and Ape. He sent messages to all the animals living on the savannah or in the jungle, inviting them to a meeting on the parade grounds in front of his palace, where they could admire him in his finery.

And so the animals came to see Lion; the Giraffe and the Hyena and the Elephant and the Gazelle and the Ape. And many more animals came as well; from the <u>stately</u> Zebra in his <u>black-and-white</u> coat to the <u>teeny</u>, <u>tiny</u> Beetle, who was so <u>little</u> that he had to walk on the side of the road so the <u>bigger</u> animals would not step on him by accident.

"I am small. I am little. People look down and can't see me," sang the Beetle as he scurried through the tall grass beside the road. "I am small. I am little. But inside, I'm tall as a tree!" When the animals were assembled on the parade ground, there came a mighty trumpet blast

Jules C 1:21 PM Apr 2, 2013

VOCABULARY: What does this mean? Where are they?

7:08 PM Apr 2, 2013 field or grassland

Jules C 1:21 PM Apr 2, 2013

SUMMARY: What are some descriptive words you can use to describe the lion?

7:17 PM Apr 2, 2013

mighty, beautiful, and selfish

Jules C 1:22 PM Apr 2, 2013

PREDICT: What do you think could happen to the Lion? What makes you think so?

7:19 PM Apr 2, 2013

he is going to kill somebody. I think this because he said that he was going to show them that he is the king.

Making Connections

"We have come to think of reading as a process in which the reader must actually interact, or negotiate meaning, with the author and text in order for true comprehension to occur" (Buehl, 2001; Rosenblatt, 1983, as cited in Cecil & Gipe, 2003)

Making Connections

Graphic organizers for making all types of connections

- <u>holt</u>
- <u>readwritethink</u>
- kidspiration (Lite version free, \$9.99 for full)
- **inspiration** (Lite version free, \$9.99 for full)
- <u>CORVIOUS</u> (1 free board, or \$4.99 for pro)
- Tools 4 Students (\$0.99)

Making Connections

Current event: Ukraine

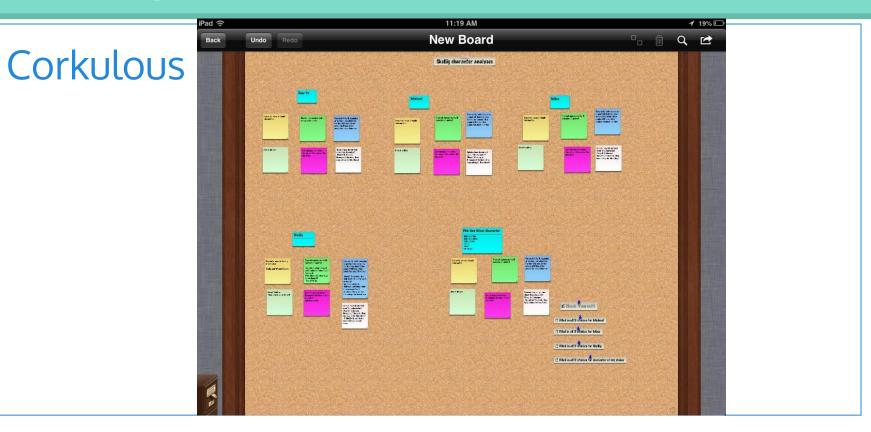
 <u>Room for Debate</u> (or if too hard, <u>newsela.</u> <u>com</u>) & <u>Graphic Organizer for</u> <u>compare/contrast</u>
 You try! <u>List of events</u> and <u>Graphic</u> <u>Organizer for timeline</u>

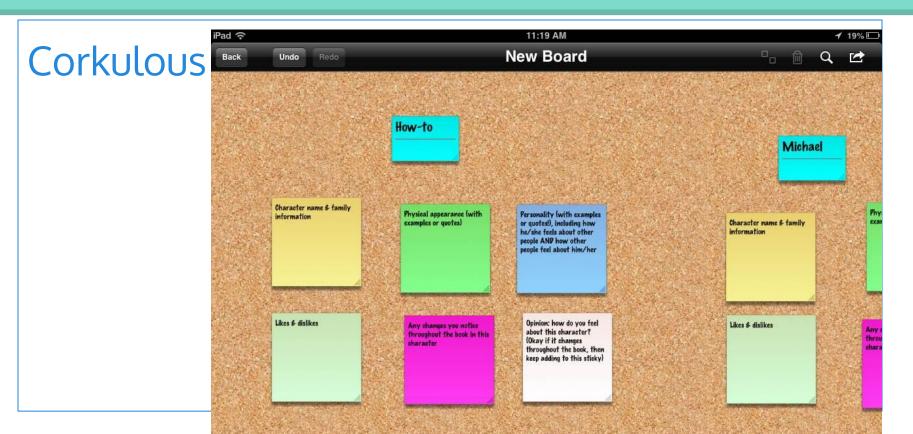
Making Connections/Inferences

Corkulous

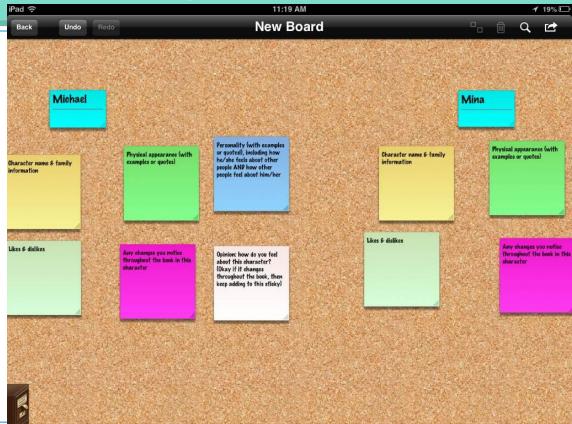


Making Connections/Inferences

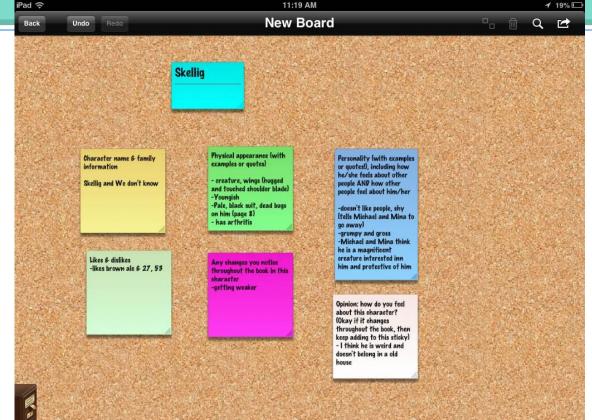




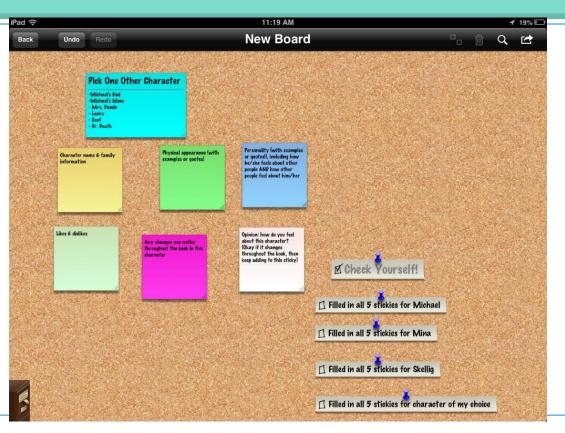
Corkulous



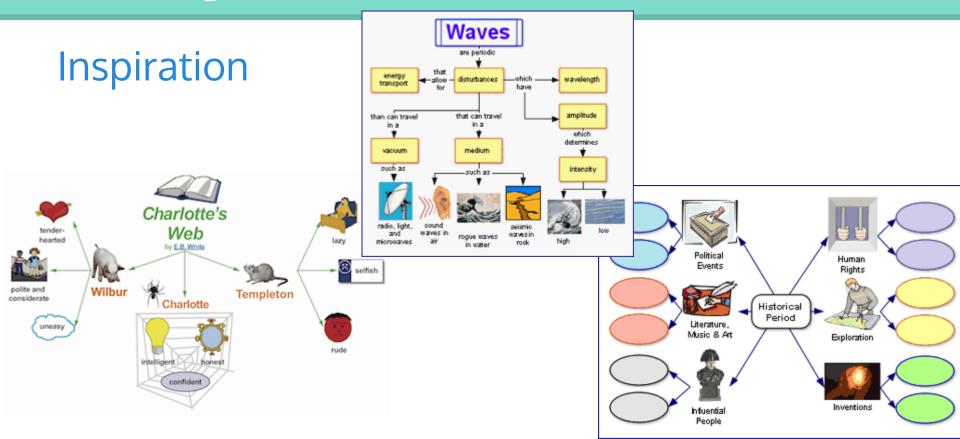
Corkulous

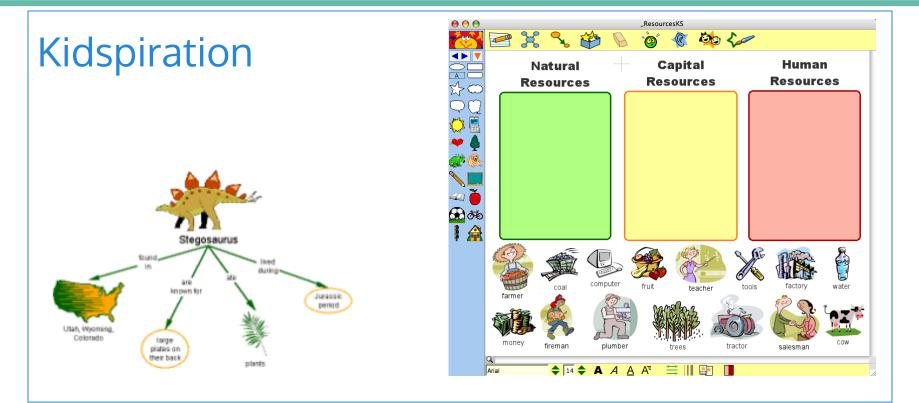


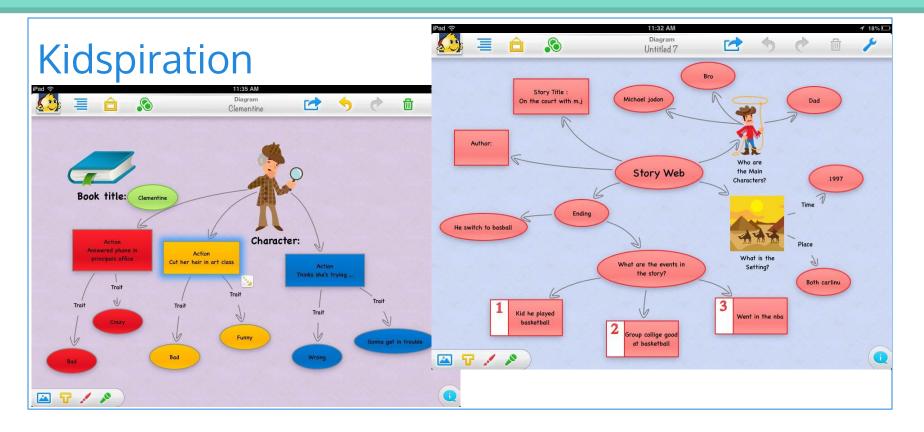
Corkulous



Making Connections







Research

- requires multiple reading comprehension skills
- some direct quoting, some paraphrasing

Research

- Diigo library
 - <u>Wind Energy research project</u> (and <u>Diigo library</u>)
 <u>You try! Wind Energy</u>
- EasyBib (4.99 per month, 14.99 for 3 months, 19.99 per year; or school subscriptions available)
 - <u>Renewable Energy research project</u> (You try! Add an advantage or disadvantage)



EasyBib My Projects Products Citation Guide & Educator Blog Support Hi, Jules 🗸 Renewable Energy Notebook -New bullet Delete 🗕 🗲 New note Organize Delete Print Full View Count: 10 VIEW Thesis: History Most common How it works: Wind Cons of renewable... Enter your Visualize 150 years ago, over 90% of renewable... paper's energy needs were met by · I don't understand how the more expensive to set up, List Biomass (including wood (a renewable sun helps wind energy Wind often located "in remote thesis here. resource), but then we wood) turbines capture the wind. areas"... but now oil & gas started using coal, getting too expensive, so ARRANGE Sometimes, the sun also Water (hydropower) turns the wind turbines to seems like worth the By Group All notes by group Ungrouped current renewable... U.S. uses 9% renewable By Tag How it works: solar Advantages energy All notes by tag How it works: Solar energy is generated never runs out Biomass during the day by the sun's Untagged · may help economy (as powerful rays. 1 Leftover wood and crop Photovoltaic solar panels, By Source you are building waste from factories and built from silicon, absorb the farms can be burned to them/bring \$ to a new Source descending produce electricity. Source ascending By Date How it works: How it works:... Least recent Geothermal Hydro energy is generated Most recent Geothermal energy is using the power of moving created using heat from the water in our Earth's rivers DELETED NOTES Earth's core. and oceans.



Diigo Library

What the research says:

- Strong relationship between vocabulary and reading comprehension (Baker, Simmons, & Kameenui, 1995; Stahl & Fairbanks, 1987)
- National Reading Panel says to provide direct and indirect vocabulary instruction

- Learning vocabulary in situ (fading prompts to independence)
- All tablets (kindles, iPads, etc.) and any webbased reading allow students to look up words in the moment

Context Clues

- <u>Google Drive stories with prompts</u> (fade)
- isolated activities:
 - 0 <u>ixl</u>
 - <u>sheppard software</u>
 - <u>Millionaire</u>
 - <u>Context Clues with intro</u>
 - <u>3 Matching games</u>

Vocabulary "Word Study"

Vocabulary in isolation (but based on a <u>systematic</u>, evidence-based approach). In context & with word roots

- Wordly Wise
- Membeam

 Other word root examples: <u>http://n-imagecache.</u> <u>aldenhosting.com/~n1studyg//vocab/prefixesjoe.swf</u>,
 <u>Appleton Area Word Study fun (some links outdated)</u>

Activities for content-specific vocabulary (rote memorization)

- Jeopardy
- visualizing (google image)
- flashcards: <u>quizlet.com</u>, <u>gflash</u> (app)

Resources Mentioned

Reading Fluency

- 1. Chromebook: <u>https://support.google.com/chromebook/answer/177893?hl=en</u>
- 2. Mac: <u>http://www.apple.com/accessibility/osx/</u>
- 3. Windows: http://support.microsoft.com/kb/306902
- 4. www.free-ocr.com/
- 5. Speak It! web extension
- 6. audible.com
- 7. librivox.com
- 8. learningally.com
- 9. youtube.com (for visuals, animations, and audio)
- 10. Whispersync

Differentiating input

- 1. <u>https://readability-score.com/</u>
- 2. http://www.lexile.com/analyzer/
- 3. sites.google.com
- 4. newsela.com

Visualizing

- 1. imdb.com
- 2. Clip Art
- 3. images.google.com
- 4. pixlr.com
- 5. SketchBook X or Sketchbook Pro (apps)

Resources Mentioned

Summarizing

- 1. Oktopodi: <u>https://www.youtube.com/watch?v=badHUNl2HXU</u>
- 2. Life: <u>https://www.youtube.com/watch?v=mWZ6b_I-Djg</u>
- 3. Alma: https://www.youtube.com/watch?v=tECaYQ1AzkM
- 4. Paper Man: <u>https://www.youtube.com/watch?v=1QAI4B_2Mfc</u>
- 5. <u>https://storybird.com/</u>
- 6. animoto.com
- 7. photopeach.com
- 8. tout.com
- 9. vine.co
- 10. instagram.com
- 11. ThingLink (app)

Questioning

- 1. drive.google.com
- 2. <u>https://www.screencast.com/</u>
- 3. <u>http://www.screencast-o-matic.com/</u>

Making Connections/Inferences

- 1. readwritethink.com
- 2. http://my.hrw.com/nsmedia/intgos/html/igo.htm
- 3. kidspiration (app)
- 4. corkulous (app)
- 5. Tools 4 Students (app)

Resources Mentioned

Research

- 1. diigo.com
- 2. easybib.com

Vocabulary

- 1. drive.google.com
- 2. http://www.wordlywise3000.com/
- 3. <u>http://membean.com/</u>
- 4. <u>http://n-imagecache.aldenhosting.com/~n1studyg//vocab/prefixesjoe.swf</u>,
- 5. http://www.aasd.k12.wi.us/staff/boldtkatherine/readingfun3-6/readingfun_prefixessuffixesroots.htm
- 6. <u>https://jeopardylabs.com/</u>
- 7. <u>quizlet.com</u>
- 8. gFlash (app)

Resources

Neuroscience & Education

- <u>http://www.brains.org/</u>
- <u>http://www.dana.org/</u>
- <u>http://www.sfn.org/</u>
- <u>http://www.tlrp.org/pub/documents/Neuroscience%</u>
 <u>20Commentary%20FINAL.pdf</u>
- <u>http://www.tc.columbia.edu/bbs/neurosci/current-issues/</u>
- <u>http://www.sfn.org/</u>

Resources

Technology:

- National Center for Learning Disabilities
- How to build Google Site (video; step-by-step slides)
- Instagram in Education
- Free Technology for Teachers
- ICT for education
- Edutopia Technology

Resources

Reading Comprehension:

- Fountas and Pinnell (Sample: <u>http://www.heinemann.</u> <u>com/fountasandpinnell/handouts/IRA2010Handout.pdf</u>)
- Improving Reading Comprehension K-3 <u>http://ies.ed.</u> gov/ncee/wwc/pdf/practice_guides/readingcomp_pg_092810. pdf#page=16
- Florida Center for Reading Research (fcrr.org)
- Cecil & Gripe 2003 (Sample: http://www.hh-pub. com/client/samples/HH1857.pdf)

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- Raskind & Higgins, 1999
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