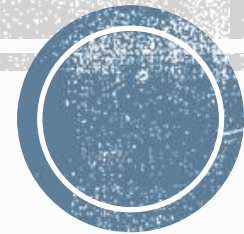


The Digital World and Education: Does This Affect Academic Achievement?

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Boys and Reading

- World-wide on a variety of academic assessments, boys do not do as well as girls do on tests of verbal skills
- Males are less likely to read traditional books, but many do enjoy graphic forms
- Research does indicate that part of the problem that boys have in school has to do with their lack of interest in reading
- Some evidence indicates that young males will develop reading skills in connection with the necessity of reading for various video games
- Is the solution to have boys read digitally?



How Many of You....

- Use some digital sources for information in your classroom?
- Only use digital sources for information in your classroom?
- Allow students to use digital methods to submit work?
- Provide some testing using digital means?
- Require students to handwrite some work?
- Are aware of OER resources?
- Utilize OER resources?



P-Book or E-Book?

- Results from research is varied
 - Depends on age of subjects, topic of reading material, and culture
 - Depends on the purpose for reading
- Early learners do better from paper source, but need to include digital as well
- From high school on up, using both digital source and paper source works best
- The better the teacher is prepared to use digital resources, the better the student learns -**Probably the most important factor in academic digital success**
 - Teachers need to have skills in using digital material
 - School needs to support the use of OER and other digital material
- No more than 500 words at a time for digital, use paper for comprehensive reading
- Tablet and paper about the same in comprehension, both better than computer



Digital Sources

- Advantages

- Can respond to changes in source material more rapidly
- Less expensive and take up less space
- Available immediately
- Can change the size of type face
- Quicker reading

- Disadvantages

- Source credibility may be an issue, students can assume information online is correct or, at the very least, is not serious
- Cannot link information to place in text
- Distractions from scrolling and from pop-ups
- Font can be distracting, use Georgia, Times New Roman, Arial, or Aptos
- **Shallow processing – remember words and not concepts**



Developing the Biliterate Brain

- The biliterate brain can read from both paper and screen equally well and knows how to use the sources effectively
- How we read digitally
 - For speed – eliminates slow reading necessary for comprehension
 - Scrolling increases because fewer words on page – cannot read and determine where you are on the page at the same time, don't pay attention to moving text
 - Visuals will decrease attention to words
- Harder to concentrate on digital book – but students without biliterate skills report that paper books are boring
- Word reading skills are the biggest predictor of how well a child learned from a digital source and from traditional text.



Developing a Reading Life

- If we only read digitally, we run the risk of using reading only to gain information without any understanding of how that information affects us and the world
- As we learn to read, we need to hear the sound of the written word – children who are read to develop better reading skills
- Reading from a paper source requires us to connect the ideas to our life and to those around us. “The most important contribution of the invention of written language to the species is a democratic foundation for critical, inferential reasoning and reflective capacities.” Wolf
- Every teacher’s responsibility is to introduce students to the language of that discipline, to the nuances of how those words shape the understanding of the discipline, and how that knowledge can be integrated into the larger life of the student and the world
 - What should an answer look like that starts with: Explain, compare, solve, define, etc. ?



Writing and Reading

- Writing longhand, especially in cursive, is slower than typing, but involves more of the brain
 - Especially parts of the brain involved in sensory information and memory
 - Learn better when using our fingers to produce the shapes of letters
 - Early handwriting is linked to emerging literacy skills
 - Cursive is the best way to write and remember – a b and d are very different
- When taking notes through typing, we are less likely to process the information and therefore less likely to remember what we are writing
- Writing on an electronic tablet such as reMarkable (the best), a Kobo Elipsa which allows for annotation, or a Kindle Scribe simulates the feel and action of writing on paper
- As with reading, students need to develop biliterate writing skills



Effect on students with learning issues

- Research does not support digital source advantage for LD students
 - May create more problems when reading from digital source
- Does provide additional resources for students who may need extra help
 - For dyslexic students, digital strategies can provide much more opportunities to be exposed to letter/sound combinations necessary for them to acquire the knowledge and understanding to read
 - Spellcheck, and perhaps grammarcheck
- Increases possibility of accessibility
 - Use closed caption with recorded lessons
 - Allows for students to access the lesson frequently, in short bursts, and repeatedly



Graphic Reading Sources

- This may be where the biliterate brain begins
- The combination of words and pictures on the page
 - Slows down the reader so that they can connect words and pictures
 - Use graphic novels as a step into digital reading
- Graphic organizers
 - Teacher made – helps students by providing structure for students to see connections in material
 - <https://www.kapwing.com/resources/10-free-graphic-organizer-templates/>
 - Student made – allows students freedom to structure their understanding of the material
 - Questions from teacher on one side of page, responses from students on other side



Use of Video Sources

- OER – Open Educational Resources
 - oercommons.org lists materials by subject, age, and standards
 - EngageNY (LA and Math) and Utah Education Network(Science, LA, and Math)
 - Free, but sometimes you get what you pay for
 - Be careful that the information fits with your material
 - Can provide more up-to-date information than a printed text
- YouTube
 - Suggest that your school pay for ad free version
 - Excellent way for students to see another way to do something
 - View the entire video before you suggest/require your students view
 - Maximum of 10-minute viewing time
 - Require that students answer questions about the content



Suggestions

- Listicle – a piece of writing presented as a list
 - Top 10 events in a story, all the adjectives applied to a major character
- Develop MindMaps
 - Requires students to discover links among the facts being studied to better understand how the information is connected
- Connect information from historic events in lessons with events in real time – when studying Pompeii, look up effects of modern volcanic eruptions – effects on citizens of recent eruptions in Iceland
- Combine reading lesson with searching for examples
 - Reading about the way octopus move and how their tentacles work together, then look up video showing the movement and the action of the suction pads



Wolf's Recommendations for Encouraging Deep Reading = Fostering Biliterate Brains

- Start reading in print so that children can learn that if they take their time, they will have their own ideas
- Writing by hand creates better writers and thinkers
- Teach coding early, sequence matters – Ozobot and Little Bits
- Introduce digital reading intentionally – for meaning not for speed
- Students should become expert, flexible code switchers
- “Very important, unlike my reading brain and yours, which have begun to take on the characteristics of the digital reading mode for everything, the hope for the next generation is that they will develop distinctly different modes of reading from the outset.”
 - Maryanne Wolf, *Reader, Come Home*



Conclusion

- Does the digital world affect academic achievement?
 - It does, so education needs to provide the following
- Students need to hear their written language read aloud
- Early education needs to use both traditional (paper book) sources as well as digital sources
 - Students should understand the difference in learning from each source
- Students should be fluent in writing both by hand (cursive if possible) and on the computer
- Include graphic materials which help students integrate pictures and words
- Provide professional development so that teachers use digital sources well
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