Assessing “Screen Inferiority”

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The Internet’s Expansion and the Book’s Role

Slides from Media for West Africa.org (Left), NASA Individualized Real-Time Neurocognitive Assessment Toolkit for Space Flight Fatigue (Cognition) - 01.16.19 (Center), Real Simple.com (Right)
## Complex Variables in Measuring Reading Comprehension

### Medium Variables (Deviation from Print Book Viewing Standards)
- Digital Means of Presentation
  - Fixed Computer Screens
  - Hand-Held Devices
  - Annotation on Screen Possible
- Digital Text Navigation Method
  - How to Proceed through Text (i.e., Scrolling?)

### Test-Taker Variables
- Level of Education
- Age
- Comfort with Computers/Technology
- Level of Prior Knowledge of Test Material
- Metacognition Skills
  - Level of Motivation
  - Skills of Timing
  - Skills at Monitoring Learning

### Test-Presenter Variables
- Does the Presenter Underscore the Importance of the Test?
- Is the Presenter Credible or Trustworthy?
- Does the Presenter Provide Cues for Successful Test Taking?

### Text Variables
- Text Formatting (Does the Digital Text Vary from the Print?)
- Text Length (500, 1000 or More Words)
- Font Type (Serif vs. Sans Serif)
- Genre (Informational vs. Narrative vs. Mixed)

### Temporal Variables
- Limited Time Duration or Not?
- Time for Rechecking?

### Type of Comprehension Studied
- Text-Based
- Inferential
- Mix of Both

### General Experimental Variables
- Sample Size
- Sampling Method
- Assignment of Test Subjects (Random or not)
- Type of Reading Comprehension Test
  - Standard or Researcher-Designed
  - Multiple Choice or Prose
Early Print vs. Digital Reading Studies, 1980-2000

• “By far the most common experimental finding is that silent reading from screen is significantly slower than reading from paper. ...Evidence suggests a performance deficit of between 20% and 30% when reading from screen.” (Italics added, p. 4)

• “Reading from screens is different from paper and there are many scenarios such as those cited that current technology would not support well, if at all. ...Paper is an information carrier par excellence and possesses an intimacy of interaction that can never be obtained in a medium that by definition imposes a microchip interface between the reader and the text.” (p. 2)

Both quotes from Andrew Dillon’s meta-analysis, “Reading from paper versus screens: a critical review of the empirical literature,” Ergonomics, vol. 35, no. 10, 1992. IBM 5150 from Wikipedia (Left), eye from Imotions.com (Center), and Open Book from Open Book Publishers.com
Research on Cognitive Mapping


Cognitive Load Theory and Digital Media

Top drawing from A.Y. Technologies.ca and the chart from Neil Atkin.com
Findings on Metacognitive Learning Recognition (MLR) and E-Media

Drawing (Left) from KQED News.org and Metacognitive Strategies from Study.com
Developing E-Media Reading Habits

Parents say reading print books is very important for their children

% of parents who say having their child read print books is ...

- Very important, 81%
- Somewhat important, 13%
- Not too important, 3%
- Not important at all, 3%

Source: Pew Research Center Internet & American Life Project Library Services Survey. October 15-November 10, 2012. N=2,252 Americans ages 16 and older. Total N for parents of children under 18 = 584. Interviews were conducted in English and Spanish and on landline and cell phones.

University of Winnipeg: The “shallowing hypothesis”

- "those who texted more than 100 times a day were 30 per cent less likely to feel strongly that leading an ethical, principled life was important to them, compared to those who kept their texting to 30 times a day or less."
- "heavy texting was also associated with higher levels of ethnic prejudice".
- "new information and social media technologies may be displacing and discouraging reflective thought," said Dr. Paul Trapnell.

Daniel Semper, Median Poster.com, 06/03/2013 (Left), Dumpster of Books from Tubelight.pk and Scott Becker, "This is your brain online: Parenting in the digital age," 04/22/2016 (Bottom Right)