



Reading on paper and screens

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IS1404 E-READ: Evolution of REading in the Age of Digitisation

- There is evidence that linear text reading on screen(s) is different from text reading on paper
 - Paper/screen affordances might impact cognitive and emotional aspects
- What are the effects of screen reading?
- We need to identify the best of both worlds (paper and screens)

Reading is

- Human-technology interaction
 - Affordances of substrates (paper; screens)
- Multidimensional
 - Substrate; text; reader; purpose
- Multisensory and embodied
 - Tactility & haptics; body and brain



An integrative model of reading

- **Ergonomic dimension** (reading is physical engagement with a device; haptics)
- **Attentional/perceptual dimension** (allocation of attention; audiovisual processing)
- **Cognitive dimension** (comprehension; linguistic processing)
- **Phenomenological dimension** (individually meaningful activity)
- **Sociocultural dimension** (socially meaningful activity)

Reading comprehension on paper and computer screen

- 72 students (10th grade) in two Norwegian schools
- Students read two 4 page long texts (one narrative, one expository) on either paper or computer screen, then answered comprehension questions on the computer
- Hypothesis: on-paper readers would perform significantly better on the comprehension assessment than on-screen readers

(Mangen, Walgermo & Brønnick, 2013)



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- Results: students who read texts on paper scored significantly better on the comprehension measure than students who read the texts on the computer

- No difference between expository and narrative text

(Mangen, Walgermo & Brønnick, 2013)

Potential explanations

- Multitasking (shifting between windows)?
- Scrolling?
- Visual fatigue?
- Lack of fixity on screen?

Immersive reading on paper and iPad

- Does it matter to our *emotional engagement* if we read a sad story on paper or on an iPad?
- 2 x 2 between-subjects design
 - medium (booklet; iPad)
 - genre instructions (fiction; nonfiction)
- Participants (n = 145; 73% women) read a 5-page narrative and completed a series of online questionnaires

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- All read the same short narrative text (5-6 p) titled “Murder in the mall” (adapted from Sherwin B. Nuland (1995), *How We Die*)
 - Letter-sized pages stapled in the upper left corner, and iPad w/Kindle app

Findings

- Subjects reading the text as a *news* story on *paper*, reported
- Highest level of **empathy** with the characters in the story
- Highest level of «**transportation**» into the story (forgetting about the «here-and-now» of the situation)
- Highest level of **clarity and consistency** in the storytelling
- Highest level of **medium/interface transparency** (i.e., reporting that the medium - paper - was not interfering with their immersive experience)
(Mangen & Kuiken, submitted)

Paper or screen? Potentially mediating factors

- *Text-related* (e.g., length; complexity; genre; layout/structure)
- *Reader-related* (e.g., age; gender; novice vs expert; special needs)
- *Substrate* (e.g., audiovisual features; haptic/tactile feedback)
- *Purpose of reading* (e.g., study; leisure; contemplation; light entertainment; news)



Thank you for your attention

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