

IS1404 E-READ: Evolution of Reading in the Age of Digitization

Position paper

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WG(s): WG2 *Developmental aspects of reading*

I am a computer scientist with 25+ years of experience in academic research, on humanizing computers. Recently, I run the Creative Technology Lab of the Moholy-Nagy University of Art and Design Budapest, to explore the potentials of digital technologies for reading, learning, cultural heritage preservation, etc.

Our activity related to e-reading, so far:

1. Designed and implemented a test application, “The Little Rooster and his Diamond Halfpenny”, with artistic illustrations. The interactive book which can be “read” and/or listened to, with images and sound to be triggered while reading. It is available in English, German and Hungarian for iPad and Android tablets for free.
2. Tested the usage of the app with Hungarian kids (8 year old ordinary school), the effect on recall of the story, concept forming and motivation (also with 6-12 year old in a special school, and kindergarten). The tests are exploratory ones with 8-12 children in each group. We made interesting observations on reading strategy, the role of interactive elements and the potentials for reading (see publications). Evaluation of tests with pre-school kids are on the way.
3. We still maintain the source of the interactive book, and are open to adjust the content for eventual further experimental purposes – as we did for e.g. for kids with special learning needs.

The outline of the problems WG2 aims are in line with my previous practice and interest in the mechanism and effect (on all level) of digital media on reading. Our observation of (commercial) products, analysis of practices and own first and qualitative empirical studies (see publication) make it clear *how huge the design space is*, when it comes to put reading material on tablet especially for early readers. Related to the novelty of the technology, there are *no methodologies even to evaluate reading behavior, strategies, not to mention the effect of (e-)reading*. Preliminary studies show that (reading and technological) skills as well as social background influence the effect. Also, we ran into very intriguing situations with children with reading problems or special educational needs (autism), suggesting that there may be extra benefit for e-reading for certain target groups, over non-interactive reading of print. There are multitude of issues – I am very pleased to join this community where we can, together, outline some joint and feasible “attack” on some of them, and benefit from each others different background and expertise.

The basic issues I would like to deal with in WG2:

- research methodology (video recording, logging, bio-feedback) to track the process of reading and attention distribution
- research methodology to measure motivation, and effect on different levels of reading (word

level, text comprehension, longer term memory)

- role (complementary/redundant) of different media (image-text-sound-narration)

- design principles for (all components of) good interactive books: font and text design, amount and distribution of images, style, interaction technologies and affordances.

Link (also to publications): http://techlab.mome.hu/little_rooster/

1. **Potential research contribution** in light of, or linked to

A. WG interest and Scientific programme:

See above,

B. Action objectives (pages 7-10 in the MoU):

C1: to develop, on the basis of an integrative model of reading, an aggregate measure of reading on ... screens.

I would contribute to measuring the effect of text and additional channels, particularly of interactive images.

C2: Secondary objectives:

- to provide evidence-based recommendations to educational practitioners and policy makers;
- to provide recommendations for optimal text/content design for educational publishing;
- to prompt systematic, empirical, interdisciplinary research transcending established boundaries between scientific disciplines involved in reading research;
- to facilitate joint scientific publications and new, radically interdisciplinary,

I could contribute to the following deliverables (and some others on policy-making too):

- A comprehensive, interdisciplinary, and testable model of **multimodal reading - if interaction and images are involved too**;
- Interdisciplinary paradigms for measuring the impact of digitization on text reading;
- Relevant indicators of reading (different kinds of texts) on paper vs. screens;
- Recommendations for industry (developers and publishers of e-books, textbooks, and educational software);

C3: **Networking**

- **sharing knowledge, and materials/tools, as well as expertise**
- **design and/or run coordinated empirical studies**

2. Interest in

A. organizing and/or participating in a **short-term scientific mission (STSM)**.

Optional: pursuing what research questions/projects; where to/with whom; linked to what objective(s) of the Action:

As of STSMs, I would be interested in using this instrument for the design and evaluation of empirical experiments to gain an insight into the learning process on digital media, especially when other than textual channels are present. These relate to the following objectives:

- to provide evidence-based recommendations to educational practitioners and policy makers;
- to provide recommendations for optimal text/content design for educational publishing;
- to prompt systematic, empirical, interdisciplinary research transcending established boundaries between scientific disciplines involved in reading research;
- to facilitate joint scientific publications and new, radically interdisciplinary, collaborative research projects (esp. across humanities/social sciences and natural sciences);
- to establish long-term theoretically and methodologically innovative research collaboration;

B. organizing and/or participating in a **Training School** (please indicate what kind of training [theoretical; methodological; technical]).

I could organize a short training school / workshop on multimodal reading, interactive books.

We would be interested in methodological and pedagogical/psychological aspects of reading.

Also the usage of bio-measurements (gaze tracking, brain activity recording).

Optional: linked to what objective(s) of the Action: