

2nd Workshop on Interactive e-Books for Children

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ABSTRACT

The second edition of this one-day workshop brings together top researchers and practitioners working in the area of interactive e-books for children. The goal of the workshop is defining key directions for future research in the design process and implementation of this kind of books, while aiming to frame the design space. Starting from the outcomes of the first successful edition, the workshop critically explores opportunities and challenges for making interactive e-books effective for children's learning and entertainment. The design of e-books for children with special needs is also considered.

Keywords

Electronic books (e-books), interactive applications for children, design of e-learning tools.

1. SCOPE AND GOAL

Given the success of the first edition, the aim of this second workshop is to investigate further all those topics related to the design and implementation of interactive electronic books (e-books) for children. Researchers, teachers, pedagogics and industry people are invited to collaborate in framing the e-books design space.

The first e-book was born 40 years ago when Michael Hart [19] started the Project Gutenberg. He digitalized the United States Declaration of Independence to favor the spread out of literature on-line. From that first electronic book, the e-books have become critically important. The Project Gutenberg [27] arrived to a total of 33,000 digital books in 2011 whereas the e-book sales in US increased exponentially in the last few years, arriving to the 441.3 millions of US dollar in 2010. Moreover, sales of children's e-books went from \$7 million in March 2011 to \$19.3 million in March 2012 [11]. According to the research presented in 2013 by Digital Book World and Playscience [23], over half of all kids in US are e-reading. These data prove that the e-books market is significantly growing. For this reason a workshop on the 'e-book' topic might be significant and crucial for defining key directions for future research in this field.

E-books are digital file. Originally, they were plain .txt, .rtf, .doc or .pdf files. Currently, they are implemented in reflowable formats, such as Mobi or ePub, which allow documents to adapt their presentation to the output device. Some of these formats are proprietary, i.e. typically controlled by a company or organization for its own benefits.

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E-books may be read on different types of electronic devices, such as Personal Computer, laptop, tablet and smartphone.

E-books may be a simple textual file or a complex multimedia application where text is enriched with audio and video material, animated figures, interactive games. A couple of examples of interactive e-books for children are shown in Figure 1 (for more examples, see [16]). Publishers are working to create more and more "enhanced" e-books to make reading books a real immersive experience [30].

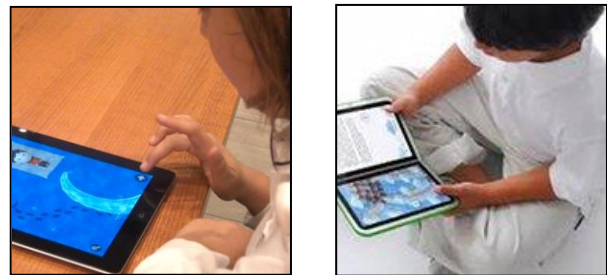


Figure 1. Examples of e-books for children.

Enhanced e-books are not only entertaining application. They are also permeating the school world, transforming the learning experience in something more exciting. Think, for example, at studying geography using an e-book connected to Google Maps or studying chemistry looking at chemical reaction animations and videos (see for example [4]).

The e-book context is definitely complicated and presents several critical points. One problem concerns the existence of different digital formats, often not compatible with all the e-book readers available on the market. Furthermore, many questions arise from the widespread availability of e-books. For example, what are the advantages of using e-books instead of printed books? We could answer that e-books are cheaper, less dangerous for environment, spare physical space, and above all more engaging. But is this always true? Or do different categories of users have different opinions on e-books? For example, do children really prefer reading enhanced e-books instead of printed books? In case of positive answer, does this also mean that reading e-books are more effective from a pedagogical point of view? And what are the effects of enhanced e-books on children's literacy?

The research studies having investigated these questions so far seem to have found not always coherent answers.

Greenfield [9] found that children prefer e-books to print books both for reading and learning whereas Woody et al. [32] found that university students prefer textbooks over e-books. However, De Jong and Bus [8] found that 4-5 years old children benefit from reading e-books in a context where adults also read printed

books to children. Furthermore, Korat [16] found that kindergarten and first grade children improved significantly in word meaning and word reading when using e-books. But Grimshaw et al. [10] found no significant difference in the children's comprehension scores when they read the electronic version of a story, compared to when they read its printed version.

Within the workshop the discussion focuses on how to design interactive e-books for children in order to create effective tools for increasing the achievement of educational and cognitive benefits, as well as fostering children's engagement, enjoyment, and fun. E-books design has enormous potential to provide stimulating tools for learning and for expanding affordable access to more diverse literature than ever before. On the contrary, poorly designed e-books may have detrimental effects on learning and cognitive skills [22].

Moreover, the workshop discusses aspects concerning possible paradigms, methodologies and approaches.

In 2002 Wilson et al. [31] defined a set of Electronic Textbook Design Guidelines. Are these guidelines still working? Or the new technologies require updated design rules and concepts?

There are some recent studies that help us find an answer to this question reporting on new design paradigms.

Markopoulos et al. [20] provide practical advice for how to design interactive applications for children. Their book could be a good starting point for whom have to develop effective e-books for children. The guidelines, based on the cooperative inquiry method prepared by Guha et al. [12], are also useful for children's e-books designers. Huang and Wang [14] present a set of interaction design principles for improving the development of interactive e-books derived from the analysis of all the common gestures which are used to read e-books. In order to set up the main steps of a user-centered design process able to take to innovative interfaces for more engaging children's e-books, Colombo et al. [7] described the preliminary results of a study about the reading experience of children in two different environments, the classroom and the school library. Huang et al. [15] developed an interactive e-book learning system for elementary school students, also involving teachers and students in the entire design process. Mori et al. [21] introduced a video-based conversational agent to facilitate the interaction with an enhanced e-book for smartphones and tablet. Hartmann et al. [13] discuss the relation between aesthetic and usability while affirming, according to ([28],[29]), that positively perceived aesthetics creates a halo effect that overrides users' poor usability.

All these approaches and paradigms look interesting and could be followed to design interactive e-books for children.

Another aim of this workshop is to create the context for trying to summarize the best of the works on this topic.

2. EXPECTED PARTICIPANTS

Once again, the workshop is mainly geared towards top researchers and practitioners working in the area of interactive e-books for children, which are particularly (but not exclusively) concerned with issues in designing, creating, using and evaluating this kind of books.

In particular, we bring together researchers from a wide range of disciplines - HCI designers, computer scientists, technologists,

linguists, educators, pedagogists, psychologists, graphic designers, editors - who work in interactive e-books for children or are interested in exploring the challenges of this domain. Our wish is to promote an interdisciplinary exchange collecting participants desiring to integrate different views and ideas, findings and experiences.

3. MAIN TOPICS COVERED

General topics discussed in this workshop are mainly related to:

- designing effective learning e-books
- designing for the abilities of children with special needs
- individualizing approaches and other methods to address individual differences
- applying theories to design and evaluation
- complying with regulations
- guidelines and standards

More specifically, the workshop presentations are related to three main topics: e-books and learning ([1], [3], [18], [25]), e-books and entertainment ([1], [6], [24]) and e-books and special needs [25].

Colombo and Landoni [6] discuss the design of playful e-books, highlighting possible risks of applying gamification to the design process. In particular, the authors raise the issue of whether gamification can be used in a meaningful way to support leisure reading, drawing mainly from the psychological literature on intrinsic/extrinsic motivation.

Schiavo and Buson [25] investigate the potential of interactive eBooks to support reading activities and learning abilities in children with dyslexia. In particular, they present the findings from empirical studies in psychology that identify best practices for editing electronic texts for dyslexic readers.

Al Aamri et al. [1] present the design of an engaging reading application that promotes the comprehension of the written text. To do this, interactive techniques based on the building of visual scenes corresponding to the textual content of a story are adopted.

Bolioli and Tasso [3] propose an interactive platform for reading classic literature in high school in an innovative way. Semantic technologies have been used to create an application allowing students to browse novels following characters or searching for places. Even students with a few literary interests enjoy this application.

Schiavo [24] presents a critical review, pointing out benefits and drawbacks, of the most innovative enhanced eBooks that researchers and publishers have proposed so far.

Kothe [18] exposes a picture e-book, where a traditional picture book is combined with the interactive elements of a digital game. This app aims to put children in contact with the art world in an engaging way.

The workshop organizers conclude the work day by proposing a discussion around a framing of the e-book design space based on the PACT analysis [2], the framework commonly used to design interactive systems.

4. EXPECTED OUTCOMES

Following the success of the first such workshop last year, we wish to continue to build a community working on the proposed

topics. In particular, this second edition of the workshop is an attempt to cement this emerging community.

The proposed workshop provides a venue to share the participants' expertise in interactive e-books field and frame the design space of this kind of books, while addressing open questions, identifying emerging trends and challenges in this field, and exploring unified approaches.

From the submitted papers and the discussion during the workshop presentations we aim at:

- obtaining a good picture of the current technological solutions [24]
- identifying requirements and constraints to develop interactive e-books supporting the claimed benefits
- identifying novel design concepts that extend the boundaries of what interactive e-books can offer to children from the educational and entertainment viewpoint ([1], [3], [18], [24], [25])
- outlining possible directions for future research in the field [24]

Finally, through a peer-to-peer review and a careful selection of submitted workshop papers, we aim to provide a suitable stage for discussion that will both push forward the state of the art and generate follow-up interest and ideas.

5. ACKNOWLEDGEMENT

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¹ <http://idc2014-ebooks.fbk.eu/>

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