Ebooks Children Would Want to Read and Engage with

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ABSTRACT
This paper describes an effort to build a bookshelf of electronic books for children. Reading is a very personal experience and, when considering children 6-9 years old, even reading for pleasure is intertwined with learning and getting essential lifelong skills. As children in the Western world are increasingly interacting with technology from a very young age, it is often the case they are exposed and enjoy playing, browsing and searching the web, even before their reading and writing skills are fully developed. Besides, we have experienced in previous studies how extremely positive is children’s attitude toward technology and this is worth exploiting when considering an essential and demanding skill such as reading. On this basis, we believe electronic books have a lot of potential in engaging and getting children more enthusiastic about reading. Of course proper interfaces have to be designed to take into account young readers’ specific needs. In order to involve children in the design process we need a collection of titles that children would want to read. Copyright free material has a role to play with classics that can be presented in appealing editions to children but it is also important to offer content children really want to read. We also need to consider the social side of reading at that young age and how children rely on each other suggestions. This is why we believe the bookshelf we aim to build in consultation with all relevant stake-holders: librarians, book sellers, parents, children and educators, will play a crucial role in getting us a real picture of how children interact and enjoy reading electronic books. In this paper, we will describe a cluster of interrelated projects, all aimed at offering children innovative and engaging e-books. None of these projects has started yet, but in here we will explore their mutual implications, rationale and related expectations. Building a bookshelf of children titles will provide us with a collections to be used during the co-design and testing of innovative interfaces for e-books as in project HEBE. It will ensure children taking part in the design process would engage with books they are willing to read for real. This will, in turn, enable us to study and build a social network for children to share and search book reviews made by their peers.

Categories and Subject Descriptors
H.5.2 [User Interfaces]: Evaluation/methodology.

General Terms

Keywords

1. INTRODUCTION
E-readers are becoming very popular as relevant, current, interesting and attractive content worth reading is now widely available. Amazon has paved the way by building a very lucky e-reader, Kindle, and providing an extensive collection of Kindle edition titles from narrative, to children books (all with the text to speech option) from manuals to textbooks. All are immediately available from the Amazon shop, often cheaper than their paper version. Companies producing e-readers have followed on by making alliances with book publishers in order to ensure their costumer a wider as possible selection of titles. Barnes and Noble1 provide a good (over a million), even if not as wide as for Kindle, choice of e-book titles in a number of formats from i-phone to blackberry, PC and Mac, and support a new contestant to the e-reader supremacy, Nook2, with touch screen and E Ink® display that also offers the possibility of lending books to friends and downloading free books. Plastic e-reader, QUE3, is instead targeting business people and the so call reading-at-work scenario. It offers a good selection of business newspapers and magazines including WSJ and Forbes.

It is clear how content, its quality and availability are playing a crucial role in determining the fortunes of these devices.

When it comes to children there is not yet on the market an e-reader designed explicitly for them. Nevertheless, young readers, 5 to 9 years old, specially those with a certain lack of interest and reluctance in reading plain paper books could benefit from the introduction of e-books as long as their design focus on the specific needs and skills of this age group. Innovative use of technology in e-readers and availability of desirable electronic titles for children could be a way to make reading more attractive and appealing to their age group. An interesting initiative is that of Nintendo DS Flips4. Books for children have been designed as a combination of games and text to be enjoyed on this very popular device for video games. The main advantage of this approach is that there is no need to buy a dedicated device, as the majority of children are already familiar with Nintendo DS and its paradigms of interaction. The main disadvantages are the size of screens, extremely small, and the fact that children can easily ignore the

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1 See their home page at http://www.barnesandnoble.com/ebooks/index.asp
2 http://www.barnesandnoble.com/nook/?cds2Pid=28709
3 http://www.plasticlogic.com/
4 See http://www.nintendodsflicks.com/
text and simply enjoy their game component once the novelty effects fades away.

Even with these caveats, still we believe this is an area worth further exploration, as the combination of games and reading with a familiar platform sounds really promising.

We are now giving a brief description of the background relevant to this research.

2. Research Context

An electronic book (or e-book) is an object, container and content, where information is organised and structured so that it can be presented to readers in order to facilitate consultation [1]. An essential support to this process is reading in its many variations from deep to shallow, from intensive to extensive [2]. Dillon [3] has produced a detailed theory to support the different facets of e-reading by spanning across different type of contents and use. On the same line of study [4] has defined a series of e-book models to support different types of reading according to purpose, format and content. Much less is known about how children read and the different types of activities associated to reading according to age and purpose.

Children books are very different from those designed for adults. They are made to be attractive and to let children explore them in different ways. Pop-ups, opening flaps, scaminations (a new technology to make pictures move on a page, see series of books by Rufus Butler Seder) are all ways to make books more interactive and engaging. This way reading is just part of the experience of interacting with a book as this becomes unique and personal to each child. As young children are supervised in their experience by adults: teachers, educators, parents, older siblings, this also turns into a social moment where the physical book acts as a trigger for further communication and exchange of opinions, beneficial to emotional and intellectual growth.

Looking at differences between children and adults when interacting with books, scenarios of use have to be addressed. Education and entertainment are the main options for children, often so entwined to become edutainment. With adults, boundaries are stricter between the three main scenarios: work, leisure and education, as these provide different motivations and require different support too. Where for adults different types of reading have been studied and classified, no such rigorous study has been done for children where age and different abilities have also been taken into account.

Adults have specific expectations and habits, consolidated reading styles, likes and dislikes [5]. Children approach books as objects (containers) as well as content, and are so curious and engaged by appearance and presentation as they are about its content. Adults look at book covers when buying and/or retrieving a book on a shelf but do not necessarily consider it part of the reading experience as much as younger readers do.

Children books are ways into an imaginary world and children, even before being able to read, freely interact with them in all sort of creative way: as building blocks or a magic carpet to pave their bedroom and turn it into a caste, or even as inspiration to read each time a different story being guided simply by memory and reference to pictures.

Books for adults are used mainly for their content, children books are creatively exploited in all their components, pages can turn into puzzles, maps and circuits, covers into crowns, frames and cut-out dolls, in fact the boundaries between children books and games are very fuzzy. This changes with age as older children are less inclined to play with books and focus more on content even if a mixture of text, pictures and even smells is still a favorite for the 6-9 years old. Librarians and book-sellers would argue that language, style, and story take a more central role with rhythm being a key in selling books to older children. For instance children classics have a problem in that they are perceived as slow in their narrative favoring long descriptions and insights [6]. Overall the production of children books takes lot of effort from authors, designers and publishers and their aim is to stimulate and educate children while bringing them fun.

The International Children's Digital Library, (ICDL)5, an interesting initiative with international reputation, supported by extensive scientific publications, has as declared goal “... to excite and inspire the world's children to become members of the global community” and this is very much in line with the intent of our project, even if our scope is restricted to what should be, in our minds, the most essential component in a digital library for children and instead gets usually overlooked: the digital book and its interface. In ICDL books are presented as one or two pages pictures of the original paper book for children to browse and navigate, there is also an iPhone version of the same browser for mobile access. Both book browsers are very simple and have been designed in collaboration with a team of 7 children aged 7 to 11, this experience is still in its early stages as reported by Bederson, Quin and Druin [7]. The same authors [8] discuss further their choice to adopt mobile technology and adapt e-books to be displayed on small devices thus sacrificing legibility in exchange for availability anytime and anywhere. While we recognise that as a worth cause, the focus of our project is on finding ways to engage young reader in a more productive and gratifying experience when interacting with e-books. We believe that more can be done to keep and stimulate children’s attention and that as many alternatives are available, from professional story telling web sites (e.g. http://www.bbc.co.uk/cbeebies/stories/) to learning toys (e.g. http://www.leapfrog.com/toys), e-books for children need to be carefully designed to be attractive, engaging and stimulating for different age groups.

Thus, our research group will explore ways technology can support creativity and fun when using e-books.

Children will be actively involved in the design of innovative interfaces for e-books that would enable them to play and explore an e-book, content and container, and share such an experience with their peers. The aim is to explore the opportunities new technologies offer in term of interface design with tangible, ubiquitous, wearable devices that together with an environment supporting multimedia can make interacting with a book a really multi-sensory immersive experience. We will explore a number of platforms and devices and exploit their potential as book support.

While paper has often been accused of being passive, static and a real limitation to authors’ and readers’ creativity, paper books for children are actually great examples of the contrary. This is why designing interactive e-books for children while competing with such an exciting paper reality is a big challenge.

There are a number of relevant initiatives already on-going that could benefit our research:

5 at http://en.childrenslibrary.org/
The Open library project is a very innovative and ambitious Open Access initiative by the Internet archive team. Their aim is to make all published books, free from copyright, freely available online. All software they produce is free access and available via their web site that acts also as a library portal giving users access to all available titles plus an option to order a scanned version of those not yet enlisted. Users can search specific books, browse their MARC records and when they have found the title they want to read can browse it using an online page turner, the flipbook tool, that allows the user to flip through the pages. This tool is available on all items from the database. This project is expanded, stretched and imaginatively re-interpreted. Different types of material are used, from paper to cloth, from plastic to feathers. Colours and pictures have an important role not only to attract readers but also to convey specific messages. Design and content complements one the other, and narrative style is specific for each age group.

INEX, Initiative for Evaluation of XML Retrieval, supported by EU as part of DELOS network of Excellence, aims at exploring how XML material is searched and browsed on the web. Since 2007 INEX has been running a Book Search track, with a collection of 50,000 e-books. Since 2008 the applicant has been co-chairing it and contributing to its definition by using her experience in the design and evaluation of e-books. The purpose of this study is to find out if children can be involved into the design and evaluation of e-books from a user point of view. In particular it is anticipated that the prototypes developed in this project will be evaluated in the Active Reading Task (ART).

### 3. Exploring

We are currently running a pilot study to get some feedback from children, 6-9 years, in the form of a children reading group. Children are asked to interact with one of the Nintendo DS Flips games, each made of 6/8 titles by same author, for a month, so that they can then be free to read and enjoy it as much as possible before asking and exchanging their opinions. This user study will be part of a larger project looking at how to build a recommender system for children's books to be based on children's feedback and reviews as these seem to be a common element of native language curricula across European countries (at least UK, Italy and Switzerland). The project will start from giving children access to a bookshelf of suitable and attractive books, this will be defined by consulting an expert librarian from the Jordanhill Library as this serves the faculty of education and has a wide selection of children books coupled with experienced and expert librarians in this field.

For each book available reviews (scanned, OCRRed, checked and indexed), will be accessible to be searched and browsed explicitly as well as to be used to implicitly provide suggestions and guide children in their choice. Once a title is selected children will be able and encouraged to browse and when possible read the book online using a suitable interface to be developed in a separate project, HEBE, just being funded by Swiss National Science Foundation (to start in September 2010). Children will then be able to add their comments about the overall searching, browsing and reading experience and make it available to other young readers.

### 4. HEBE: Highly Engaging e-Book Experiences

This study aims at producing novel interfaces for playing, interacting and reading e-books for children. It starts from the findings of a series of users studies (e.g. [10]; [11]; [12]; [5]) we conducted on how adults interact with e-books in different scenarios of use (including education and entertainment) and explores how children can be involved into the design and evaluation of novel, engaging, intuitive interfaces in order to make the reading experience more attractive to younger audience.

In this context, children books are those written and designed specifically for children. This means that content, vocabulary, style, presentation and format are suitable for children’s physical, linguistic and emotional characteristics, with the caveat that each different age group has to be catered for separately.

Children books, especially those for young children, offer a good example of creativity and variety in terms of both content and presentation. Often, the concept of books as container of information is expanded, stretched and imaginatively re-interpreted. Different types of material are used, from paper to cloth, from plastic to feathers. Colours and pictures have an important role not only to attract readers but also to convey specific messages. Design and content complements one the other, and narrative style is specific for each age group.

Children have limited ability when it comes to reading and writing according to age and stage in development, personality and learning styles, they also have limited vocabulary and means to interpret metaphors and other rhetoric figures used by authors. The so-called digital native children are used to be continuously stimulated and their ability to focus on long uneventful sections is quite low. Movies, television and peer pressure get a role in making a book a success for adolescents.

It emerges from this very brief overview that children literature is a very open area to explore per se, even without considering the impact ICT can have on it; this is why it is really important to define carefully the scope of this study.

This project aims at studying how to design of e-book interfaces (or readers) for children as a way to support children exploring, interacting and reading children books in a creative environment.

We propose in this study to involve children in exploring different types of technology, hardware and software, in order to produce more engaging, usable and fun e-book interfaces for them.

Thus this study focuses on how children interact with e-books at home, school and library and taking into account children age and development stages, it will aim at answering the following questions:

- Can e-books for children add extra value to the reading experience?
- Are e-book models developed for children suitable for books or should these be expanded or even completely reconsidered to take into consideration specific children needs?
- Are new design approaches needed in order to make children e-books fun and usable?
- How can children be effectively involved in the design of children e-books?
• How can children be effectively involved in the evaluation of children e-books?

The main hypothesis of the study is that in order to make e-reading a fun experience for children new innovative interfaces are needed and children have to take an active role in their design.

A crucial condition for achieving this is to be able to present children with material they really want to read.

The Microsoft Research has provided us with support in buying titles possibly in English and Italian, the official language in this part of Switzerland, in order to build two bookshelves: one for the 6-9 years old and one for the 3-6 years old. The first group will be engaged in a variety of activities from searching, browsing, recommending to reading and reviewing a book. For the second group we envisage a series of observations and an expert in education lead study into how children interact with books and how their creativity could help designing better e-readers.

The bookshelf would feature titles selected by expert librarians and educators in different formats including, when available, XML to be sourced directly from publishers.

We are at the moment negotiating copyright issues with publishers and authors and studying formulae for building an attractive bilingual shelf of books aiming at the 6-9 age range. We hope that this experience will also help us setting up similar bookshelves for different ages and languages, even if dealing with copyright regulation in Switzerland is already proving a challenge.

5. ACKNOWLEDGMENTS

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6. REFERENCES