

5. CONCLUSIONS

In this paper we proposed some recommendations for designing better and more engaging eBooks for children. They were informed by the ideas of an intergenerational design team. Cooperative Inquiry proved to be an effective method for our purposes: the long-term partnership with children co-designers allowed us to explore many ideas and, consequently, to condensate the most salient ones into a set of six guidelines.

In general, some of these guidelines seem to suggest that the eBook should be designed to be flexible enough and to allow children to tailor the reading experience on their persona in order to reach a balance between the challenges of the reading activity and their skills. *Gamification* (i.e. using game design elements in non-game contexts) is another important aspect in a context of leisure reading, but designers should exercise caution when adding features to enhanced eBooks. This because the story told by the text is, or should be, the core of the book and the main source of children's engagement with it: therefore any design solution or enhancement should contribute in this sense.

Our recent work of evaluation [2] seems to indicate the efficacy of our design guidelines, still further research is needed to better understand children's experience with enhanced eBooks (for instance eBooks based on different novels or targeted to a different age-group) or the interplay between the story itself and the various multimedia/interactive elements. Our hope is that these guidelines will inspire researchers and practitioners to create eBooks which are – as Alan Kay wrote – “*active (like the child) rather than passive*” [9].

6. ACKNOWLEDGMENTS

We would like to thank the children who have been our design partners over the last year and all the teachers and librarians who helped us in the study.

This work is supported by Swiss National Science Foundation (HEBE project), Microsoft Research at Cambridge and the Faculty of Informatics at University of Lugano – USI.

7. REFERENCES

- [1] Clark, C. and Rumbold, K. 2006. Reading for Pleasure: A Research Overview.
- [2] Colombo, L. and Landoni, M. 2014. A Diary Study of Children's User Experience with eBooks Using Flow Theory as Framework. Proceedings of the 13th International Conference on Interaction Design and Children - IDC '14 (New York, New York, USA, 2014).
- [3] Colombo, L. and Landoni, M. 2013. Low-tech and high-tech prototyping for eBook co-design with children. Proceedings of the 12th International Conference on Interaction Design and Children - IDC '13 (New York, New York, USA, 2013), 289–292.
- [4] Gilutz, S. and Nielsen, J. 2002. Usability of websites for children: 70 design guidelines.
- [5] Grimshaw, S., Dungworth, N., McKnight, C. and Morris, A. 2007. Electronic books: children's reading and comprehension. *British Journal of Educational Technology*. 38, 4 (2007), 583–599.
- [6] Guha, M.L., Druin, A. and Fails, J.A. 2012. Cooperative Inquiry revisited: Reflections of the past and guidelines for the future of intergenerational co-design. *International Journal of Child-Computer Interaction*. in press (2012).
- [7] Have, I. and Stougaard Pedersen, B. 2013. Sonic mediatization of the book: affordances of the audiobook. *MedieKultur. Journal of media and communication research*. 29, 54 (2013), 123–140.
- [8] iOS User Experience guidelines: 2013. <https://developer.apple.com/library/ios/documentation/userexperience/conceptual/mobilehig/UEBestPractices/UEBestPractices.html>. Accessed: 2013-09-05.
- [9] Kay, A.C. 1972. A Personal Computer for Children of All Ages. Proceedings of the ACM annual conference - Volume 1 (New York, NY, USA, 1972).
- [10] Korat, O. and Shamir, A. 2008. The educational electronic book as a tool for supporting children's emergent literacy in low versus middle SES groups. *Computers & Education*. 50, 1 (2008), 110–124.
- [11] McKnight, L. and Cassidy, B. 2010. Children's Interaction with Mobile Touch-Screen Devices: Experiences and Guidelines for Design. *International Journal of Mobile Human Computer Interaction*. 2, 2 (2010), 1–18.
- [12] Mcquillan, J. and Conde, G. 1996. The Conditions of Flow in Reading: Two Studies of Optimal Experience. *Reading Psychology*. 17, 2 (Apr. 1996), 109–135.
- [13] Nell, V. 1988. *Lost in a Book: The Psychology of Reading for Pleasure*. Yale University Press.
- [14] Nettet, V. and Large, A. 2004. Children in the information technology design process: A review of theories and their applications. *Library & Information Science Research*. 26, 2 (2004), 140–161.
- [15] Piaget, J. 2007. *The Child's Conception Of the World*. Rowman & Littlefield, 2007.
- [16] Roskos, K., Brueck, J. and Widman, S. 2009. Investigating Analytic Tools for e-Book Design in Early Literacy Learning. *Journal of Interactive Online Learning*. 8, 3 (2009), 218–240.
- [17] Roskos, K., Burstein, K., Shang, Y. and Gray, E. 2014. Young Children's Engagement With E-Books at School: Does Device Matter? *SAGE Open*. 4, 1 (2014).
- [18] Schreurs, K. 2013. Children's E-books are Born: How E-books for Children are Leading E-book Development and Redefining the Reading Experience. *Partnership: the Canadian Journal of Library and Information Practice and Research*. 8, 2 (2013).
- [19] Walsh, G., Foss, E., Yip, J. and Druin, A. 2013. FACIT PD: A Framework for Analysis and Creation of Intergenerational Techniques for Participatory Design. Proceedings of the SIGCHI Conference on Human Factors in Computing Systems - CHI '13 (New York, New York, USA, 2013), 2893–2902.
- [20] Wilson, R., Landoni, M. and Gibb, F. 2002. Guidelines for Designing Electronic Books. Proceedings of the 6th European Conference on Research and Advanced Technology for Digital Libraries – ECDL (2002), 47–60.
- [21] Zucker, T.A., Moody, A.K. and McKenna, M.C. 2009. The Effects of Electronic Books on Pre-Kindergarten-to-Grade 5 Students' Literacy and Language Outcomes: A Research Synthesis. *Journal of Educational Computing Research*. 40, 1 (2009), 47–87.