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How Far is UP? Encouraging Social Interaction Through Children's Book App Design

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Figure 1: Scene 1, *How Far is UP?* A children's book app that has different information in the written text and audio narration with the view to inviting meaningful social, intergenerational interaction. Illustration, writing, set design, typography, digital design © Betty Sargeant.

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Abstract

Historically picture books have been a social medium, an item understood by a combination of child and adult readers. Book apps are a new format for picture books. These items do not commonly require an adult co-reader; the audio narration 'reads' the text to the child. *How Far is UP?* is a children's book app designed to foster social engagement. Through interacting with the work users uncover text that contains different information to the audio narration. Pre-literate audience will not be able to comprehend the textual aspect of the narrative. Children will require an adult to read the text aloud and to discuss the content so that together they can formulate deeper narrative meaning. This study draws on children's literary theory with the view to uncovering ways in which interactive digital storybooks can entertain, educate and foster meaningful social, intergenerational bonding.

Keywords

Mobile application; book application; interactive narrative; interactive book; interaction design for children; HCI; social interaction; children's book app.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

In Western societies picture books have been used to teach child social and literary skills; they are a cornerstone tool in early developmental education [1, 2]. Increasing numbers of young children now read digital books and engage in literature via mobile devices [1, 2].

Children's book applications (apps) can be viewed as a direct extension of print picture book literature [2, 3, 4]. Digital storybooks commonly contain audio narration; this is used in lieu of an adult reading the work aloud to a child [1, 2]. Adults have historically read books to and discussed book content with pre-literate children; this increases a child's understanding of literary work [1, 5]. In this study we draw on picture book conventions with the view to uncovering ways in which book apps can encourage meaningful social encounters between adults and children.

Related Work

Digital interactive storybooks can contain 'conversational agents' [6]. In these works an animated character is superimposed over a digital book. These characters ask questions or pose comments about the book's content. This design concept aims to promote engagement between children and digital book content. This design technique has been shown to be most effective when adults read the book to a child; the conversational agent promotes more discussion on the content presented [6]. An example of an effective conversational agent is the character 'Grover' in the book app *The Monster at the End of this Book* [7].

Children's digital interactive storybooks can also contain digital 'tutors' [1]. In these works virtual teachers ask questions and the child responds by selecting from a set of multiple-choice answers [1]. This specific style of interactive book design has been seen to be effective in improving children's vocabulary and story comprehension. This design does not require adult co-reading support [1]; it focuses on delivering prescriptive stories with the aim of educating children.

Many children's storybooks are less prescriptive as authors and illustrators can create works that allow for multiple interpretations of a narrative. Through these books audiences are invited to form their own understandings of the story [3, 5]. The 'dual audience', which consists of child and adult readers, comprehend the narrative by combining their interpretations of

the work [5]. Intergenerational audiences engage with the content of the book, and with each other, in order to create meaning.

How Far is UP?

How Far is UP? is an iPad book app designed for pre-literate or semi-literate audiences aged three to five [8]. The work is based on a fictional story yet it also contains factual space imagery and information courtesy of NASA (Figs. 1 and 2) [9]. This interactive book explores ideas relating to distance and space.



Figure 2: Scene 8, *How Far is UP?* This app combines space imagery and original illustration. Spacecraft window: *Atlantis' Window on the World* © NASA 2009. Simulation of galaxies: *Starry Night Tango* © NASA 2013. Illustration, writing, typography, digital design © Betty Sargeant.

The three characters in the app are a five-year-old boy, a dog and a mouse. The boy is curious about distance and space. Encouraged by the mouse the trio embark on a bumbling escapade to the outer reaches of the universe. Finding themselves in peril the shy dog leads the group safely home to earth.

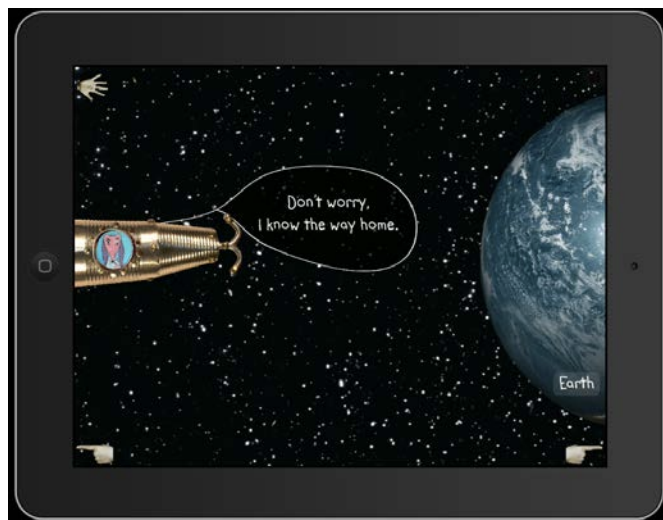


Figure 3: Scene 12, *How Far is UP?* The text in this scene primarily operates as dialogue. *Earth* © NASA 2012. Illustration, writing, typography, digital design © Betty Sargeant.

Design Tactics

Each scene within *How Far is UP?* begins as a static image. When users touch or move the hardware device this can trigger changes in the work. User interaction triggers animated sequences to begin or text to appear. These design ideas can be compared to techniques used in print picture books. Interactive print picture books often present an initial static image, audiences can then be invited to move pop-up imagery, reveal hidden aspects, or even to trigger inbuilt audio [3, 10]. In both print and digital storybooks, interaction design allows audiences to convert still images into multimedia storytelling arenas.

Each of the media elements in *How Far is UP?* tells a different part of the overall narrative. The animated sequences depict a humorous relationship between three friends. The audio narration is a documentary account of a progression through outer space. The text provides either: further information relating to distance and space, or it operates as dialogue (Fig. 3). The

techniques used in these aspects of the work find their roots in print picture book design. Picture books often present different narrative information in the text and the images so as to invite a depth to the story (Fig. 4), [3, 5].

Discussion

The content in *How Far is UP?* is aimed to appeal to both adults and children. It is not anticipated that children will instantly comprehend all of the ideas presented. It is expected that adults will engage with the work and communicate with children over the content, so that together they can form deeper narrative meanings. For example, figure 5 is a still image of an animated sequence. It depicts a map of the USA being superimposed over a picture of the moon. This scene presents size comparisons. It is not expected that three year-old children will instantly grasp this comparative concept, yet through discussions with adults, young audiences may begin to understand ways in which these ideas operate.



Figure 4: Scene 3, *How Far is UP?* The written text and audio narration present different narrative information. The audio narration accompanying the above excerpt states: "UP. The tallest tree branch". Sun image: *Star 5* © NASA 2006. Illustration, writing, set design, typography, digital design © Betty Sargeant.



Figure 5: Scene 6, *How Far is UP?* Children may require adult explanations of the ideas presented in this animated scene. *Moon* © NASA 2012. *City Lights of the US* © NASA 2012. Illustration, writing, typography, digital design © Betty Sargeant.

Conclusion

Through interacting with *How Far is UP?* pre-literate audiences uncover textual content that they cannot comprehend. This design tactic is intended to encourage adults to assist in decoding narrative meanings from within the work. It invites a deeper intergenerational exploration of the content. Through deploying this design technique we look to provide an alternative book app design, one that seeks to entertain and educate audiences and to encourage meaningful social, intergenerational interaction.

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