# Engaging the Audience: Concepts for the Use of Companion Devices.

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## Abstract
This position paper describes a means to support television co-viewing through the use of a tablet or smart phone to compliment the television viewing experience, with a specific focus on various uses of a text bar. A review of literature regarding co-viewing and the use of companion devices led to recommendations for the development of a television program aimed at a preschool (3 to 5 year old) audience.

## Author Keywords
Television, co-viewing, mobile devices, computer mediated communication, input devices

## ACM Classification Keywords
H5.1. [Information interfaces and presentation (e.g.,HCI)]: Multimedia Information Systems --- Video.

## Background
While research focus on digital media and children, specifically the intersection of co-viewing, learning, television (TV) and interactive media, continues to grow, there remain a number of assumptions that have not been tested in the context of research. Content developers and TV producers would benefit from better understanding children's attitudes towards TV, media multitasking, best practices for learning from TV and digital media, and recent findings are shedding light on

how best to develop interactive content for pre-school aged children.

The social relationships children form to on-screen characters have been found to l influence their learning from those characters [1]. Characters talking directly to the screen, mimicking eye contact with the viewer, and establishing a para-social relationship with the children increases the likelihood for learning. Recent studies find children are more prone to respond to prompts from TV characters when there are other people in the room and suggest opportunities for parallel, "in-room" interaction to improve learning [2, 5].

To encourage social interaction among co-viewers. Fisch [3] studied the use of a text feed aimed at mothers, during a children's program. This "mommy bar" was initially added to encourage co-viewing, but the content was not directly related to the TV program (information which had no relationship to the program, but was of potential interest to the adult, was displayed). Fisch tested the effects of *related* text (for example, during a scene were a character was upset, the text would read, "Why is Toto sad?"). Such onscreen prompts contribute to story comprehension, language development and literacy in young viewers. The study also implies that content specifically directed towards adults, within the context of a children's program, facilitates co-viewing.

Building on the work of Fisch, Takeuchi and Stevens [6] review current literature and present design recommendations, making the argument that, "what goes on between people around media can be as important as what is designed into the media." (p 71) While the authors point out that such a claim subverts our normative understanding of media, it informed work recently undertaken in the development of *Chugga Chugga Wow*, a Canadian TV property.

**Case Focus: *Chugga Chugga Wow***

The producers of *Chugga Chugga Wow* are interested in exploring different means to engage the audience beyond the experience of just watching the program. In particular, they wanted to better understand how a young audience interacts with a TV program and how the presence of other views might influence both the viewing experience and the capacity for learning.

The TV property is aimed at a preschool audience (aged 3 to 5) with the hope that it would be sold internationally. These constraints had to be considered when evaluating interactive media and complimentary screens.

Research regarding co-viewing, learning, TV and interactive media, in particular with regards to a preschool audience, was reviewed. Existing research formed the basis of the various proposed applications, discussed below.

**Discussion**

It was decided early in the development of *Chugga Chugga Wow* to explore the integration of tablet or smart phone companion devices. An inaudible audible[1] will be added to the TV broadcast, allowing mobile devices to sync with the TV program. This approach allows for complimentary interactive content that is directly related to the TV viewing experience. For

[1] An audio signal, embedded in the broadcast, which falls outside frequencies audible to humans.

example, if characters on TV are tasked with popping balloons, balloons can also appear on the mobile device screen where the viewer can mimic the actions of the TV characters (by tapping to similarly “pop” balloons).

Of particular interest was the potential of speaking directly to the parent or guardian who might be watching with the child. Research regarding the use of text in this context [3] led to a number of specific applications were proposed:

*Mobile device text bar*
Instead of adding a text bar directly to the screen, the text will be delivered via the tablet or smart phone device. This component will be synched with the TV broadcast, and the user has three options:

- stream text at the bottom of the screen (while the user of the device can interact with other components)

- stream text using the entire screen (no other components will run concurrently. This may be preferable for an adult watching the show with a relatively smaller smart phone screen)

- to turn off the text

The text can also be used to share educational information regarding the specific episode or scene. Prompts for young children to address adults may also be considered.

Since this interactive content exists outside of the TV broadcast, language reformatting on the broadcast signal or involvement of the broadcaster is not required (as it would be in the use of screen crawls). This is an important consideration for TV producers whose viability requires multiple language sales in foreign markets.

*Other uses of mobile device*
Where co-viewing is not possible, an “audience” can exist on the tablet or web app that reacts to the user’s interactions or engagement, creating the illusion of other people in the play space. Since the mobile device is synchronized with the TV broadcast, this fictional audience can also react to events on the TV screen, further enriching the illusion of shared viewing experience.

Where a TV character more closely resemble a viewer, the emotional investment in the program increases for the viewer. This improves learning outcomes [4]. Resemblance of characters to the the viewer can be facilitated via the companion (mobile) screen through the ability of such devices to capture images of the children, which can then be embedded into the interactive content, either directly or as a cue for characters of similar appearance.

## Conclusion

This position paper presents concepts that emerged from a literature review, but which have not been tested. The development of prototypes will allow for rigorous user testing, through which our understanding of media multitasking, and best practices for learning from TV and digital media, may be improved.

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