

# Evaluating Interactive TV Applications for and with Pre-literate Children

Ana Vitória Joly

School of Computing, Mathematical and Information Science

University of Brighton

Watts Building, Lewes Road, Brighton, BN24GJ, UK

+44 1273 230 107

[A.V.B.Joly@brighton.ac.uk](mailto:A.V.B.Joly@brighton.ac.uk)

## ABSTRACT

The aim of this research is to explore and modify as appropriate existing techniques applied on studies in Child Computer Interaction to evaluate interactive television applications for and with young children.

## Keywords

Children, digital interactive TV, user-centred design

## INTRODUCTION

Along with the digital broadcast there was a proliferation of children's channels, the audience has fragmented and the channels are now targeted at specific segments of the children's market. On this context, new content and new forms of storytelling are starting to replace standard content through digital media.

However, interactive services for pre-literate children have textual interfaces and inconsistent navigational processes, so children might experience some difficulties to interact thus not being able to fully enjoy the personalized experience without an adult help.

Nevertheless, in today's realistic scenario the majority of children is watching television on their own most of the time. As a result, young children may not move from passive viewers to a more active role and full benefit from the potentials of the digital TV unless they have some assistance.

This research was focused on suggestions to evaluate interactive TV services for and with young children, so that the results from the usability testing sessions may be fed back into applications design and improve the user-experience allowing pre-literate children to interact on their own.

## METHODOLOGY

During the evaluation three interfaces were compared, the current CBeebies interface for Satellite TV and two prototypes developed, to measure user-experience, satisfaction and fun.

The case study was the strategy chosen. To enable generalization from the case study, this project involved five four years old children randomly chosen, with different ethnicities and genders.

To evaluate the interfaces it was decided to observe and then ask

children their opinions. The methods chosen to be used during the observational evaluation was the Wizard of Oz combined with active intervention.

During the first usability testing session the Wizard of Oz protocol was used to control the prototypes developed and the CBeebies current service was tested "live". During the second usability testing session the Wizard of Oz protocol was used with the prototypes and also to simulate the CBeebies interactive TV service. And after both usability testing sessions it may be noticed that the fact that the Wizard of Oz method was used instead of the application running in real time had no effect on the results.

Taking the case of Kid Pix reported by Allison Druin [1] as an idea it was placed on the table some children's magazines, crayons and stickers, to act as distracters and check if the children got bored and decide to play with the crafts instead, it was also good to have other activities once the test sessions would involve more than one child, and only one would be able to control the remote per time so the others could play with something else if necessary. It was noticed that children observed, cheered and supported the child interacting. If one had problems to interact the others supported and tried to help for a little while, but when the interaction remained problematic, they moved to the craft activities and left the child controlling the remote playing alone.

Hanna et al, (1997) suggested that children up to five years old should be allowed to explore the interfaces according to their own interests and pacing instead of performing a series of directed tasks. However, there were three interfaces to be tested and evaluated by children in such a short period of time; so, it was decided to ask children to perform specific tasks.

The video was used to score engagement and in order to ask children their opinions the survey method chosen was the Fun Toolkit developed by Janet Read. In this project, to evaluate the prototypes, three of these methods were selected, the ones that could be better adjusted to be used by young children: The Smileyometer, in which children choose a face (from awful to brilliant) to represent their opinion; the Again and Again table, in which children are asked which application they would like to use again; and finally the Remembrance Metrics to check what children liked the most and what they remembered from the experience it will be asked them to make a drawing.

Both Smileyometer and Again and Again Table were slightly modified to be used in this research once the children involved in the project were younger. In the Smileyometer children were able

to choose a sticker for each interface, represented by a picture, reflecting their opinion. In the Again and Again table they were asked which interface they would like to play again or have at their TV at home, and the words underneath each interface picture were yes, maybe and no, big and thick enough for them to colour. On both Smileyometer and Again and Again Table the pictures were presented in different order for each child, so to be more difficult for them to check others opinion, and also prevent that the specific order could interfere on the survey results.

The order that the prototypes and current CBeebies interface were presented also was changed from one session to the other and it could be noticed the great impact this order had on the results. The fact is that on the three interfaces the navigation works in a really similar way and as children changed from one to the other they acquired this knowledge on how to navigate and as they navigate easier they had a better user experience and this was reflected on the way they enjoy the application on the observational evaluation and the ratings they inserted on survey results.

Janet Read and MacFarlane do not recommend the Smileyometer for young children, according to their research "Smileyometer scales are of limited value with very young children as nearly all of them pick 'brilliant', whatever the actual experience" [4]. However, in this project it was confirmed through the analyses and interpretation of the observational data compared with the survey results that when critical incidents happen and children had trouble to interact without help the ratings on the Smileyometer were low and in the Again and Again table they confirmed they would not like to have that interface on their TV at home.

During the evaluation of the current CBeebies interface in the first usability testing session the child that had trouble to enter and exit the game rated this interface as awful on the Smileyometer and affirmed that he did not want that application in his TV on the Again and Again Table. During the second testing session, the order of the interfaces presentation contributed to make it easier to use the CBeebies interface, and the fact that children had more control because they already knew how to play gave them a better user-experience that reflected in their opinions about the interface; it was rated as really good and brilliant by the users who tested it on this usability session and both affirmed they would like to have it on their TV at home.

The child who tested the first prototype developed in the first usability testing session had a great user-experience, it may be noticed on the video her joy and smiles, as a consequence on the Smileyometer she rated it brilliant and on the Again and Again table she affirmed she would like to use it again. During the second usability testing session the child that tested this prototype rated it as good, this was probably due to the fact that even having a nice user-experience playing and founding it easy to leave the service she struggled to enter the game.

The interface of the second prototype developed was not easy to navigate; it seemed that children did not understand the audio instructions, and this had an impact on the results from the survey.

It was rated as awful from the two children that tested it. However, through the remembrance method was confirmed, as Gilutz and Nielsen stated [2], children are attracted to characters in general. Dotty, a character that help children to interact in the second prototype, was the one thing children liked the most and demonstrated it in their drawings, from the five drawings the only two related to the interfaces presented was the representation of the character. So even not having a good experience interacting and reaffirming it on their ratings in the Smileyometer and Again and Again Table children liked the character.

## **CONCLUSIONS**

Concluding this project, the major findings and recommendations to evaluate interactive TV services for and with young children are: Conduct usability test sessions with prototypes in early stage, may be done using the Wizard of Oz protocol and is certainly useful to predict many problems that can be solved before making the final version of the interactive service in which any alteration will be much more expensive and time consuming. Another reason to conduct test with prototypes is that children during the usability testing sessions demonstrated that the "look" of the applications does not interfere too much, they tested the CBeebies current application and two prototypes made in Power Point, and the existent service was not higher rated than the prototypes.

The Smileyometer, Again and Again Table and Remembrance method are extraordinary tools that can and should be used as survey methods in studies with younger children as well. With some slightly modifications for this age group it could be noticed that the results can be easily triangulated and really reflect the experience the child had interacting.

When children could easily enter, play and exit the interactive service they had a better user experience and this was reflected on their opinions about the application and defined if they would like to use it again.

## **ACKNOWLEDGMENTS**

This project was done during the work experience at BBC, so I would like to thank Anthony Simon, Olivia Dickinson and the CBeebies children's' interactive TV team. In addition, I appreciate the on-going collaboration of the children at the One World Nursery.

## **REFERENCES**

1. Druin, A. The Role of Children in the Design of New Technology. Available at <ftp://ftp.cs.umd.edu/pub/hcil/Reports-Abstracts-Bibliography/99-23html/99-23.html> (2002).
2. Gilutz, S. & Nielsen J. Usability of websites for children: 70 design guidelines. Fremont, USA, Nielsen Norman Group, 2002.
3. Hanna L., Ridsen K. & Alexander K. J. Guidelines for Usability Testing with Children. (1997) *ACM: Interactions*.
4. Read J. C. & MacFarlane S. Using the Fun Toolkit and Other Survey Methods to Gather Opinions in Child Computer Interaction. *Proceedings of IDC2006* (Tampere, Finland, June 2006), ACM Press, 81-88.