Designing for Mr Hippo – Introducing Concepts of Marginalisation to Children Designers

Janet Read, Matthew Horton, Emanuela Mazzone, Brendan Cassidy, Lorna McKnight
Child Computer Interaction Group
University of Central Lancashire
Preston, PR1 2HE, UK
+44 1772 893285
{jcread, mplhorton, emazzone, bcassidy1, lmcknight}@uclan.ac.uk

ABSTRACT
Children are often encouraged to participate in the design of, and the evaluation of, interactive products that are intended for their use. The products they may encounter can vary according to their purpose and their complexity and so, in most cases, children simply offer insights into products rather than being expected to have comprehensive knowledge about the situations that surround the use of interactive technology.

This paper describes a field trial of a technique called 'Designing for Mr Hippo', which aims to explore how children can design for marginalised users, including those that are very different from themselves.

.

Categories and Subject Descriptors
H13.1 Human Factors

General Terms
Design, Human Factors,

Keywords
Design, marginalised users, children, methods

1. INTRODUCTION
Children are often encouraged to participate in the design of, and the evaluation of, interactive products that are intended for their, or their peers, use [1], [11], [10], [8]. The products they may encounter can vary enormously according to their purpose, their complexity, and their specialisms and so, in most cases, children simply offer insights into products rather than being expected to have all the answers.

Situations where children are more likely to struggle in design and evaluation of interactive products include where the technology is very very complex, where the technology is being designed for a specific purpose – for example to modify behaviour or to cause learning [5]– and those cases where the technology is designed for a user group that exists at some distance from the child's own experience – for example the target audience may be very young children, may be a different gender, or may have different life experiences.

In the case of designing for marginalized youth, the involvement of children can be complicated by these same three situations. In each case the problems are exacerbated by the specific nature of the problem of designing for marginalized users as the technology knowledge gap between the marginalized users and the children designers may be significant. If technology is being designed to support the integration of marginalized children then it is unlikely that children will have much idea how best to design for this scenario [5], and finally, the children engaged in design sessions may have no experience of feeling marginalized so may have little empathy with, or understanding of, the end users.

The first of these problems is beyond the scope of this paper, the second and third problems are, to some extent interwoven. It is possible to ask the question, '*Irrespective of technology is it possible for mainstream children to provide design ideas for interactive products that might reduce the marginalization that can be experienced by some of their peers*?' The solution to this question might be found by assisting children in understanding the causes and impacts of marginalization and thus bring them to a better understanding of methods to reduce exclusion and promote cohesion.

The remainder of this paper describes a field trial of a technique called 'Designing for Mr Hippo'. The method is motivated by some background literature on marginalization, exclusion and inclusion; the work that leads to Mr Hippo is described in brief and then a 'Mr Hippo is Designed for', session is explained and unpicked. Finally some suggestions for the improvement and further development of the Mr Hippo method are proposed.

2. BACKGROUND

In the UK, as many as 1 in 7 children in primary schools do not speak English as their first language. In some areas, English is a foreign language to more than 70 per cent of four to 11-year-olds, putting enormous pressure on teaching staff. There are also several schools without a single pupil who has English as a first language. This is a rising trend – in 2004, 452,388 primary school children spoke English as a second language. By 2007 this figure had increased by 113,500, a rise of almost exactly 25 per cent.

The problem is not exclusive to the UK, other European countries are experiencing similar trends especially as mobility across Europe increases [3]. A recent study of immigrant children in Germany showed that these children do less well at school, not just because of their lack of language but also due to a lack of socialization [4].

Talking to children about marginalisation has been used in several studies but in general it is most often used to discover how children feel when they are marginalised [6]. A recent study used conversations to discover some of children's perceptions of others and concluded that having children discuss things in this area was useful [7].

3. DESIGNING FOR MR HIPPO

The technique that is described here is intended to provide a fun and easy way for children to begin to understand how to design for users who are not the same as themselves. The technique is intended to shrink the load on the child designer by reducing the area of concern as shown in the diagram in figure 3 overleaf.

3.1 Method

Designing for Mr Hippo is described in two stages: Preparation and Play. Preparation takes place before the children get involved; play takes place with the children.

To prepare for the session three things are needed: a space where a group of around four children and an adult can work together, a semi-creative but tangible / haptic task (in this instance children were asked to design a game using dominos and playing pieces from board games), and Mr Hippo. Clearly Mr Hippo can be another animal! But some animals are probably better suited to this method than others.

Figure 1 – Mr Hippo - showing his size

IDC 2009, June 3–5, 2009, Como, Italy

Figure 2 - Mr Hippo - showing his face

What is important is that Mr Hippo is lovable, large and endearing. The images of Mr Hippo in Figures 1 and 2 give some idea of his size and stature. .Mr Hippo is positioned in the room, sat on a chair at the table of artifacts and the chairs for the children are arranged around the table – then children are brought to the design space.

Before play begins in earnest, the children need to have explained to them what is going on. They are introduced to Mr Hippo and are told to design, in this instance a game, for Mr Hippo and then explain it to him so he can play with them. The catch is that Mr Hippo only speaks Hippo. The children then design simple games with the artifacts on the table and when they have an idea they are invited to have Mr Hippo play. Mr Hippo is 'manipulated' by either an adult or one of the children and he lets the child know, by his participation or otherwise, how he is doing in understanding what is going on.

3.2 Observations During Play

The Mr Hippo technique was used with five groups of four children (20 in all) from a class of UK schoolchildren aged 7 and 8. The children came to the event in groups of three, four, or five and were accompanied by a teaching assistant (who tended to take very little part aside from occasionally encouraging the children in the design of their games) and each event was managed by a single researcher (who oversaw all the sessions) and Mr Hippo. No formal note-taking was used as the intention was to simply evaluate the technique and see if it was worth further developing.

Mr Hippo was extremely popular with all the groups. In the first group a child asked if she could hold him and she had him whispering in her ear and telling her what he did or did not understand. Subsequently, seeing how successful this was, the researcher asked each group, once they had settled, if anyone wanted to hold Mr Hippo and there were no shortages of volunteers. In each group, Mr Hippo attempted to play some of the games but in the later groups some children had Mr Hippo picking up game pieces with his mouth, moving them with his feet and becoming very involved. The last group of the day was almost fighting over Mr Hippo as each member of the group wanted him to play his or her game.

It was because Mr Hippo could only speak Hippo that he was isolated and marginalised. Children took different approaches to try to overcome this but they all realized it was a problem that

needed to be solved somehow. Several children asked the researcher if Mr Hippo spoke French or German, and one suggested that he could speak to Mr Hippo in sign language, but each of these solutions was flawed in that the child proposing the solution didn't speak French, German or sign language in any event!! Several children tried shouting at Mr Hippo (who reported to his secret friend that he was getting sore ears), and two or three were noted saying 'hippo, hippo, hippo, hippo' to him until it was pointed out that 'human, human, human, human' didn't make much sense.

The children designed games that could be played by one or two (as turn taking or competitively) but many modified them once they realized that Mr Hippo couldn't understand. Strategies that were eventually adopted for conveying the rules of the game included 'designer demonstration', (generally Mr Hippo didn't understand this), 'drawing instructions', (only really understood when some sort of timeline was used – like a storyboard), and 'Mr Hippo manipulation', (one of the most successful – this was when the child held Mr Hippo's paws and directed them to do each step.) A very innovative method was seen in the last group when a child played on his own, then had another friend playing, then the third and so on until all the table were playing except Mr Hippo, who then easily understood what to do.[1]

3.3 Children's Learning

Towards the end of each session, the children were asked to finish up their play and were brought together to think about Mr Hippo. The researcher asked the children what they would do if a hippo arrived at their school tomorrow and they all laughed at the idea but in conversation it transpired that many would want to be friends with the hippo, and some would be scared of him, but it was certainly the case that they would all see he was different. Discussion then moved onto the very real problem, in UK schools, of newly immigrant children from other European countries who are unable to speak in English. At this point the children all realized the connection between designing for Mr Hippo and designing for these children. They started to offer suggestions about how they could play games that the 'marginalised child' could enjoy.

The interaction design community has not been slow in looking at the problems of marginalisation, considerable work has been done that uses ICT to reduce exclusion [2], [9] but in general these works have had children solely as end users and not as designers.

4. DISCUSSION

The study threw up many questions but was surprisingly successful in as much as Mr Hippo was much better received and the technique was better understood than was initially hoped for. It was expected that the children might find Mr Hippo too babyish or that they might find the concept too abstract but the opposite was the case; the children surprised the researcher with their affection and care for Mr Hippo and the teacher of the children remarked that the better understanding, from the children, of the issues faced by children without the shared language was impressive and encouraging.

What this study did not do was to test if this better understanding would influence design ideas in a second instance. For instance, the children might have been able to go away and design a game for two that Mr Hippo could play as the 'purpose' in this activity was reasonably straightforward – it was to have fun. Had the purpose been more complex, the challenge of designing for Mr Hippo might have been considerably different and a different scenario might have been needed.

Further work will involve taking Mr Hippo to other schools and doing different activities to see what the outcomes are. The following studies are planned:

a) Designing a game to teach Mr Hippo how to understand school dinner choices. This is expected to go a little further up the purpose axis as it takes the child designer a bit further into the realms of designing for education. It is expected that children will design better games for Mr Hippo if they have some understanding of how to teach language – so half the children will be given this and half won't and we will see what happens.

b) Designing for inclusion. Children will be shown a video in which Mr Hippo is left out when others are conversing together in the school playground. They will be asked to design a simple mobile device that Mr Hippo and others in the class can use to initiate interaction. It is expected that this will take longer than twenty minutes and may need to be done in stages.

To validate and better understand the results from these (and other) design sessions, some survey instruments will be created to enable data to be collected that can indicate engagement in, and learning from, design activities. In addition, a new method for design coding will be used as a starting point to discover how effective the Mr Hippo technique is.

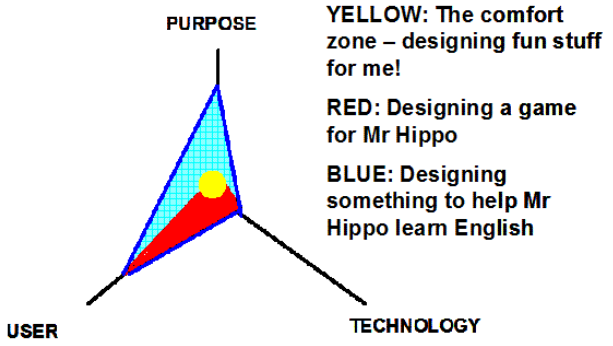

Figure 3 - The more the child has to move away from his or her comfort zone - the more difficult the design task will be

Figure 3 shows how the concerns of technology and the concerns of different users might add complexity to the design process for children. It is expected that for children to design for marginalised users they will have some difficulties and so teasing the chid away from his or her comfort zone is an important feature of the design space.

5. CONCLUSION

The technique described here was partially successful in meeting the challenge of seeing if children could design for users who were not just like them. In addition it showed that children can

[1] If necessary, you may place some address information in a footnote, or in a named section at the end of your paper.

have many odd ideas about how to deal with marginalisation but are also very able to find ways around problems of communication and method.

One child in this study said something that at first hand was simply amusing – he remarked, quite seriously, that 'I used to speak Hippo but I have forgotten it now'. it is possible to communicate with very little language and so it could be that it is children who are most able to teach us, and to design for, inclusion.

6. ACKNOWLEDGMENTS

Thanks are due to the children and teachers who participated in this study and also to the owner of Mr Hippo for letting him participate in this work and to the photographer who worked with Mr Hippo to supply the images in Figure 1 and 2.

7. REFERENCES

[1] Brederode, B., Markopoulos, P., Gielen, M., Vermeeren, A., and de Ridder, H. *pOwerball: The design of a novel mixed-reality game for children with mixed abilities*. in *Proc IDC 2005*. ACM Press.(2005), 32 - 39

[2] Byrne, E. Addressing the vulnerability of children through information systems: a South African case study. . in Proc Annual Research Conference of the South African institute of Computer Scientists and information Technologists on IT Research in Developing Countries ACM Press.(2004), 30 - 43

[3] Eurydice, Integrating Immigrant Children into Schools in Europe. 2004: Brussels.

[4] Knapp, W., *Language and learning disadvantages of learners with a migrant background in* 2006, Out of School and Higher Education of the Council of Europe Strasbourg.

[5] Mazzone, E., Read, J.C., and Beale, R. *Design with and for disaffected teenagers*. in *Proc Nordichi 2008*. ACM Press.(2008), 290-297

[6] Messiou, K., Conversations with Children: Making Sense of Marginalization in Primary School Settings

[7] Messiou, K., Understanding children's constructions of meanings about other children: implications for inclusive education. *Journal of Research in Special Educational Needs*, *8*,1(2008). 27 - 36.

[8] Read, J.C., Gregory, P., MacFarlane, S.J., McManus, B., Gray, P., and Patel, R. An Investigation of Participatory Design with Children - Informant, Balanced and Facilitated Design. in Proc Interaction Design and Children. Shaker Publishing.(2002), 53 - 64

[9] Slay, H., Wentworth, P., and Locke, J. BingBee, an information kiosk for social enablement in marginalized communities. in Proc Annual Research Conference of the South African institute of Computer Scientists and information Technologists on IT Research in Developing Countries. ACM Press.(2006), 107 = 116

[10] Theng, Y.L., Nasir, N.M., Thimbleby, H., Buchanan, G., Jones, M., Bainbridge, D., and Cassidy, N. *Children as Design Partners and Testers for a Children's Digital Library*. in *Proc ECDL2000*. Springer Verlag.(2000), 249 - 253

[11] Verhaegh, J., Soute, I., Kessels, A., and Markopoulos, P. *On the design of Camelot, an outdoor game for children*. in *Proc IDC 2006*. ACM Press.(2006), 9 - 16