Ethical Usability Testing with Children

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INTRODUCTION

Usability testing of children's software on children is an important part of the software development and evaluation cycle, but the dilemmas of conducting usability testing in an ethical manner need careful consideration in order to protect the participants' well-being. The main issues in conducting research with children are the protection of the child, informed consent, and voluntary participation. Protection of the child is achieved by careful consideration of the design of the research. Consent is required from the parent and the child depending on the ability of the child to give informed consent. The final issue is voluntary participation, and thus the child's right to refuse to participate must be respected.

REASONS FOR CONDUCTING RESEARCH ON CHILDREN

This article looks at the dilemmas of conducting ethical usability testing with children in the context of university research and publicly funded research in which researchers are required to meet strict criteria specified by the institutions in order to protect the participants and the credibility of the research and the institution. Private organizations are not subject to the same procedures, but should still be considering the following issues in order to protect the best interests of the participating child. It is important to conduct research with children, as children can benefit from these activities and the findings from research conducted on adults cannot always be assumed to apply to children. According to the Australian National Statement on Ethical Conduct in Research Involving Humans (2005, p. 4.1): "Research is essential to advance knowledge about children's and young peoples' well-being." It is by researching children that their voices can be heard and their preferences can be taken into consideration. There are many areas in which children are valuable research participants, particularly in education as the education process affects them greatly. Hedges (2001, p. 1) states, "Views of children affect the content and process of the education they receive and ways they are researched." For example, software designed for children should be tested on children to ensure that it is age appropriate for the target audience and that the children are able to use the software as predicted by the designer (Burmeister, 2001).

Conducting ethical research with adults is difficult and takes considerable thought and effort. Conducting ethical research with children is even more difficult, as there are even more complex issues that need to be addressed and they are more susceptible to some types of harm that may arise from research (Commonwealth Government of Australia, 2005). "Children can be seen as both agents and dependents—children can be empowered to participate in research with agency, but with regard for their different cognitive and language abilities, structural vulnerabilities and cultural and ecological context" (Hedges, 2001, p. 2).

Once the research as been completed and analyzed, the knowledge gained by conducting research with children should then be released to the public (conforming to the appropriate confidentiality provisions) in order to improve the circumstances of children and thereby justify the conducting of the research (Hedges, 2001). The participants in the research must also be informed of the findings. In the case of children, this should be done in a language that is appropriate to the age of the children involved (Johnson, 2000).

GUIDELINES FOR RESEARCH INVOLVING CHILDREN

Use Qualified Researchers

It is important that researchers who work with children are adequately qualified and trained, as children are vulnerable participants. Johnson (2000) points out that it is important to treat children with respect. This will ensure ethical behavior in the design of the experiments and the treatment of the participants. Children are indispensable for research in the same way as adults, however they have additional and unique requirements to ensure ethical outcomes.

Gaining data from children can be complicated by a number of characteristics that children may exhibit. Although not exclusively characteristics of children, they are more prevalent in this group. Read and MacFarlane (2006, p. 82) state: "Factors that impact on question answering include developmental effects including language ability, reading age, and motor skills, as well as temperamental effects such as confidence, self-belief and the desire to please." False data may be collected if the children can make up answers in order to please the interviewer or if they tell the interviewer what they have been told by adults rather than giving their own opinion (Hedges, 2001). Another reason for using well-trained researchers is that young children may have limited ability to express themselves verbally and the accuracy of the data is dependent on the researchers' ability to understand the children (Hedges, 2001). The presence of the researcher can affect the result, especially in the case of children. Read and MacFarlane (2006, p. 82) state, "Even when there is no deliberate intervention the interview has an effect. In one study it was shown that children are likely to give different responses depending on the status of the interviewer." Hedges (2001, p. 6) notes that "Children behave differently with people they are unfamiliar with." Also the presence or absence of a parent or guardian can significantly effect a child's behavior, so careful consideration needs to be given to the physical research design.

Provide Appropriate Company Depending on the Child's Age

There are special considerations that need to be taken into account for researching with children. The testing environment needs to be explained to them so that they are comfortable with equipment and tape recorders. Young children up to the age of seven or eight years of age need to have company during the session. A researcher providing company for children reduces parents' interference in the process. Young children under the age of five will probably need a parent with them. Children older than this will not need parental company, so ideally the parent can be in an observation room during the session. Siblings of children involved in user testing should not be in the room as they pose a significant distraction (Hanna, Risden, & Alexander, 1997).

Carefully Consider the Involvement of Teachers

The involvement of teachers in research with children has advantages and disadvantages that need to be considered carefully in the research design (Hedges, 2001). Teachers who participate have established rapport with the children and may enable the children to relax, but it is important not to take advantage of the children's trust. There can also be problems with bias when teachers are involved. This may occur consciously or unconsciously.

Select the Location of the Research Carefully

The location of the research is an important issue: should the researcher go to the children in a home or school setting, or should the child come to the researcher? Usability labs offer iterative testing with changes between each test session, but the children may not be as comfortable as in the home environment and not as many children can be tested as by testing groups within a school setting. The three main methods of gathering data are observations, interviews, and questionnaires (Hanna et al., 1997). Usability testing is usually used to assess ease of use, learning, and appeal over time.

Use an Age-Appropriate Research Design

The age of children involved in testing affects the style of testing that is appropriate to gather the required information (Ellis, 2002). Hanna et al. (1997, p. 10) found that "most children younger than 2½ years of age are not proficient enough with standard input devices