Working with Children as Design Partners: Ethical Considerations

Abstract
This short paper presents several important ethical considerations for designers and researchers working with children as technology design partners. Involving children in the design process gives them a voice in the design of technologies intended to be used by them. One important ethical consideration is to ensure there are benefits to the users – in our case that there are benefits to the children as they participate in the design process. Other ethical considerations are discussed.

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Cooperative Inquiry; children; participatory design; social; adventures

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Introduction
Technology has become a pervasive aspect of our modern culture. The proliferation of technology impacts not only our modern day society as a whole, but in particular has tremendous impact on children. In the United States it has been estimated that 66% of 8-18 year olds have cell phones, and that children in this age group interact with entertainment media for approximately 7.5 hours each day [1]. As technology

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becomes more and more embedded into our culture, it is in our best interest as a society to question the effectiveness of these technologies and whether these technologies are meeting real needs of real users. In order to investigate this, designers must be in contact – at least minimally – with users. We focus on children as users and designers of technology.

There are many ways of involving children in the design process [6]. Druin describes different levels at which child users can be involved in the design process [5], and this is the framework that we employ. Children can be involved in the technology design process as users, testers, informants, and design partners. In the role of user, children use a technology that has been developed and summative information is collected and conveyed to the designers. In the role of tester, children are involved before the “deployment” of the technology allowing for some final revisions before the technology is deployed. There is a qualitative shift as the roles switch from tester to informant. As an informant, children are brought in at key points in the design process to help form or direct the design of the technology. When children are involved as design partners, they are indeed partners in the design. They are involved throughout the design process. As indicated by Figure 1, children acting in a more involved role may also at times act in the capacity of a less involved role. Thus a design partner can also engage in activities of an informant, tester, and user.

**What is Cooperative Inquiry**

Cooperative Inquiry builds upon foundational principles of Participatory Design (PD), and applies these principles to work with children. Early PD work focused on empowering workers in Scandinavian countries to participate in the design of their work environments [3]. The goal of Cooperative Inquiry is similar in that its primary goal is to give children a voice in the design of technologies intended to be used by them. In Cooperative Inquiry [4, 5, 9], children and adults work side-by-side to design new, and improve current, technologies. In this intergenerational partnership, children and adults work in a collaborative and elaborative process where children and adults share and build on one another’s ideas. In this manner, children and adults work together as design partners.

In the Cooperative Inquiry method, adults and children (ages 6-11) use hands-on activities that adapt principles of both Piaget’s constructivism [11] and Papert’s constructionism [10] – where Piaget describes more the what and Papert the how [2] – in co-constructing and discovering new technologies. The lead authors of this article each have 10+ years of experience designing technologies with and for children using the Cooperative Inquiry method. A design team that uses this method has been running for 15 year at the University of Maryland, and 4 years at Montclair State University. In both instances the design team – composed of both children and adults – is referred to as Kidsteam. On these teams, children are allowed to return and participate on the team over multiple years.

**Potential Benefits of Cooperative Inquiry**

Several research papers have discussed anecdotal or informal findings regarding various potential benefits to child design partners. These potential benefits include social benefits such as improved abilities in terms of collaboration, communication, empowerment, and confidence; positive cognitive outcomes such as learning content, about technology, and about
designing, as well as other benefits (see literature review in [7]).

While these anecdotal findings are encouraging, it is important to investigate these suggested benefits in a more formal manner. In [7], Guha describes a year-long investigation of the experiences of children involved as design partners according to the data gathered throughout the year including participant observation notes and analysis of artifacts from design sessions, as well as interviews with child design partners and their parents. In analyzing the data gathered from this process, a framework emerged for describing the cognitive and social experiences of children involved as design partners in the Cooperative Inquiry process (illustrated in Figure 2). The constructs that emerged in the social domain were relationships, confidence, and enjoyment. The constructs in the cognitive domain were skills and content, where skills included reading, problem solving, and application, and content consisted of technology and discipline-specific content. The overlap between the social and cognitive domains consisted of communication and collaboration.

Within the construct illustrated in Figure 2 there were several indicators of positive outcomes to the children. As this paper is short only, a few of these observations are highlighted herein.

In terms of the social experiences, relationships was the category with the most data, which relates to the quality of interaction between design partners – both children and adults – when working in pairs, small groups, or as a whole group. The data reflected how children enjoyed helping others during the design team sessions and felt a high-degree of comfort with the relationships they had in the team.

Other observations made in the formal study [7] within the construct of the cognitive aspects include increased confidence, empowerment, and enjoyment. Within the construct of cognitive aspects, benefits were observed in terms of reading, problem-solving, and knowledge transfer skills. Children also learned specific content (that pertained to the items being designed), technology know-how, and design process understanding. There were many positive aspects with regard to collaboration that were observed. For a detailed treatise on this study see [7].

While it is important to recognize the potential social and cognitive benefits for children involved in technology design processes, it is also important to recognize the possible motivations and benefits for the different parties involved, namely: children, parents, and adult researchers.

Children’s Perspective
Child design partners often state that they want to participate in Kidsteam because it is fun – which is a perfectly acceptable response. They like that they are

![Figure 2. The social and cognitive experiences of children involved as technology design partners [7].](image-url)
given a voice in the design process and that they can influence the design of the technology intended to be used by them and their peers in the real world. At the end of each year, the children receive a technology gift (a technology item valued at $100 or less) which is a token of our appreciation for the work they have done with the team throughout the year.

Parent’s Perspective
Parents of children who participate on Cooperative Inquiry design teams may be motivated by several factors. Parents appreciate the social and cognitive experiences and recognize value of giving children a voice, and having it heard by adults. To most parents, while they like to see the technology that is created, oftentimes it is the increase in communication skills or confidence in their own child that are cited as the primary outcomes – the technology is mostly a byproduct. Pragmatically, Kidsteam is a free afterschool activity with positive outcomes for their child.

Researcher’s Perspective
Researchers who work in this area are generally genuinely interested in designing technologies that will enhance children’s lives. They also value action and applied research. As any designer or researcher, one motivation of researchers and designers participating in this process is to further their careers. For student researchers, one of the motivations is to graduate.

Despite the variety of motivations for conducting and participating in this design process, in our experience we have found that the balance of benefits for all parties seems equitable to each party involved.

Other Ethical Concerns
There are some other ethical concerns that are important to discuss.

Work With, Not Use
As design partner researchers we inherently view our work as a collaborative process, and therefore we are working with children not conducting research using children. This is an important ethical distinction! Some researchers are familiar with using tools to meet an end, in this research we are not using children as a tool, we work with children using the Cooperative Inquiry method.

Privacy
Oftentimes colleagues ask about the ethical questions surrounding privacy. In our teams, we disclose to parents that we take pictures and due to the nature of the design process first names are used in any video that is captured. While we maintain the privacy of the children on our design teams, their faces and first name may be revealed, but only with permission of their parents. When possible, we do change names in academic publications. When we conduct summative evaluations not involving our design partners, we generally use aliases and demographic descriptors, but due to the highly involved nature of Cooperative Inquiry that level of anonymity is not always possible.

Adult versus Children, Consent versus Assent
Working with children is different than working with adults. In institutional review board (IRB) terms, children are unable to consent, but are able to assent to participating in the research. Of course, all children need the consent of their parent or guardian to participate.
What Level of Involvement is Ethical
One might ask: Is it ethical to design something without some level of input from that user population? A follow up to this initial question is that if you involve users (in our case children) in the process, what level of involvement is required to be ethically sufficient? The answers to these questions are likely quite complex, but these questions require some consideration within the context of design ethics.

Conclusions & Future Work
It behooves researchers who work with participants to identify potential benefits to those that are involved. While many researchers are required to meet minimum standards as overseen by an institutional review board (IRB), researchers have opportunities to investigate more than just the technologies they intend to create, but the possible affects participation may have on those they involve in the design process [8]. It is our hope that other researchers will continue to examine the important issues of how the children we involve in the design process are affected by their participation and that more designers will choose to work with children in this way.

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