Children and Emerging Technologies: Ethical and Practical Research and Design

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ABSTRACT

Child Computer Interaction is concerned with the research, design, and evaluation of interactive technologies for children. Working with children in HCI is rewarding and fun but managing that work so that children are kept comfortable and can participate in meaningful ways is not always easy. This course will provide attendees with practical tips to organise sessions with children, with signposts to methods for research, design and evaluation and will specifically consider the ethics of children's participation with checklists to support us in doing our most ethical work possible. Our focus on emerging technologies makes this course especially valuable to those looking at AI, robots, XR and related technologies.

CCS CONCEPTS

• **Human-centered computing** → Interaction design; Interaction design process and methods.

KEYWORDS

Child Computer Interaction, Evaluation, Design, Research, Ethics, Children, Emerging Technologies

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1 BENEFITS

This course will introduce attendees to core values, methods, and techniques for working with children in CCI and Children's UX. By children we focus on ages 7 through 13 but will also talk about very young children and teens. Attendees will be given practical handouts and documentation including – personas, planning sheets, toolkits, and checklists. The course focuses on working with children in research, design and evaluation in ways that empower, and give value to, children. For this version we will specifically frame the learning around emerging technologies with case study examples from robot interaction [24, 46], AR design [8, 42] and agent technologies [10, 23].

Children are significant users of, and a large market for, interactive technology but there is still much work to be done to make technologies fit for their use [33]. Children are beginning to interact with technology at younger ages [21] but there are considerable difficulties still found when examining how children interact with mainstream technology [31]. For example, research is needed to understand how children interact with technologies like robots [22], designers need to make products intended for learning more accessible to children who may have special needs [9], and children need to be empowered to give their opinions of, and their ideas towards, new innovations [1]. In our course, these 'needs for more work' will be highlighted.

Engaging directly with children in research, design and evaluation has consequences for the child: the value of the engagement to children has to be balanced with the needs for the researcher to engage with the children. The HCI community listens to the voices of children through participatory practices [3] and through research [15], but in recent times the expanded rights of the children, in terms of their empowerment and agency, have been a major theme [11, 16, 18, 29]. As an example of a tension, in our own work, children aged 14 were prevented from being allowed to be photographed for a newspaper because their parents had decided they should not be photographed in school – the child's right to choose was taken from them. The extent to which children can consent, the difficulties around things like deception and the ad hoc selection of children for participation have all been noted as problematic [6]. Our course will 'wake up' participants to the great privilege and considerable responsibility of working with children.

At the end of the course, it is expected that attendees will:

- Better understand the unique characteristics of working with children in research, design, and evaluation, especially in the context of emerging technologies, and be enabled and challenged to improve the experiences of the children they work with
- Have a clearer understanding of the impact of method choices on children's agency and engagement and on research data, evaluation results and design ideas.
- Gain knowledge of techniques for the ethical recruitment of children, the managing of studies and the writing and reporting of work.

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- Be able to locate and use techniques that will be useful in general Child-Centered Design.
- Discover new methods and tools and feel empowered to apply them in their own work.

2 INTENDED AUDIENCE(S)

This course is ideal for researchers, practitioners and designers who are interested in the research and design of digital environments for children (of all age groups). In past courses, participants included researchers, practitioners, and students.

3 PREREQUISITES

It is assumed that those attending have a basic understanding of HCI methods and/or UX research methods; outside of that there are no prerequisites.

4 CONTENT

We have actively interspersed each session with three or more activities to ensure participant engagement in either online or face to face delivery.

We will begin the course with a discussion of how to put children first in our HCI work. We will introduce a set of scenarios that can happen when working with children which will be used to challenge some of our thinking as we go along. The theoretical part of this session will focus on children's rights and the ways that children can participate. We will use video examples, case studies and children's narratives to talk about when it might not be appropriate to work with children and on what measures we can take to gain value for children in participation.

Following the introduction, we introduce a subset of methods for Research with Children, Design with Children, and Evaluation with Children. We will introduce tools and methods that have been shown to be effective when working with children. Research Methods include the PETT toolkit (in press) which can be used to describe the expertise of a sample of children. Design Methods that are described include Co-Design, Layered elaboration [45], and Obstructed Theatre [28] and we will stress the importance of using ideas from children in appropriate ways. Evaluation Methods include the MemoLine [44], This or That [48], and The Fun Toolkit [25] as well as discussion on planning evaluations and on carrying out observational and ethnographic work.

The last session is a discussion of reporting and ethics, which gives ideas for where we can go to learn more. We will specifically consider working with young (<4) children and will discuss the CHECk toolkits for ethical work [32]. Practical advice on the recruitment of children and on reporting [41], both to the scientific community, and also to the children, is included in this section of the course.

5 PRACTICAL WORK

The course mingles participant activity with engaging content and short videos. There are seven practical exercises planned. The first is an introduction which has proved invaluable in previous versions as it allows the participants to make connections. Historically this course has attracted many beginner researchers, and they find this connection valuable. The next activity is a kind of 'spot the problems' quiz where we give out scenarios and ask the participants to find what can go wrong; this is followed by a practical exercise at 'being a child' and completing a PETT questionnaire on experience of taking photos on a digital tablet device. The next session uses a planning sheet to engage individuals in planning a session with children. There are two activities where participants get to see children's contributions – both designs and survey responses – we circulate these on the day (they are collected in afterwards as we do not want them to go beyond the room) and discuss what children mean by their responses and ideas. This leads onto the last activity which is around the ethics of working with children where we complete an ethics checklist [36].

6 INSTRUCTOR BACKGROUND

Janet C Read is a Professor of Child Computer Interaction. Currently researching cross cultural CCI [20], childlike computing [34], and small CCI [37], she has previously published widely on the ethical inclusion of children [30, 35], design [4, 5, 38-40] and evaluation [26, 27]. Prof. Read is the founding editor of the International Journal of Child Computer Interaction, a previous chair (on two occasions) of the ACM Interaction Design and Children (IDC) Conference and a former chair of the ACM Child Computer Interaction Community. She is widely published in CCI and HCI, is a member of the ACM SigChi ethics committee and has over 200 articles in CCI.

Yoram Chisik is a lecturer in User Experience (UX) engineering at Goldsmiths, University of London. His research explores the ways in which young and not so young humans (and non-humans) interact with and through technology including with reading [17], tangible play things [10] and food [2] He was a founding member of the University of Baltimore Kidsteam lab [19], a chair of the Advances in Computer Entertainment (ACE) and Interact conferences and a senior advisor to companies and government agencies in the United States, Canada, Japan and Turkey. Yoram has organized numerous workshops on CCI and HCI and is widely published in both areas.

Elmira Yadollahi is a Postdoctoral fellow at KTH Royal Institute of Technology, Sweden. She obtained her PhD in Robotics and Computer Science from École polytechnique fédérale de Lausanne (EPFL), Switzerland and Instituto Superior Técnico, Portugal. Her research tackles the development of robots with transparent and explainable behaviours [46] for child-robot interaction and human-robot collaborations [12, 46, 47]. She is an associate editor of the International Journal of Child-Computer Interaction (IJCCI) and has served in various organisational roles in conferences and workshops.

Matthew Horton is a Senior Lecturer at UCLan with over twenty years of experience in working with schools and industry in HCI and CCI. He has actively organized more than 100 school events in and around the North of England and has recently directed a large project with over 150 children in nine different school classes. His research is broad, and he has many papers relevant to this course. In particular he has published on personas in CCI [43], and in the active involvement of children in CCI work [7, 13, 14].

7 RESOURCES

See www.chici.org for more information.

8 ACCESSIBILITY

All our content is screen reader friendly, and we will make every effort to accommodate any special needs from p articipants. Our own work has been with children with different needs and so we are very attuned to ensuring full participation in this course for all who attend. Previous versions of this course have been delivered to sight-limited people with no difficulties. As we will be using videos, we will ensure that these are captioned and also have a textual description to help with accessibility issues.

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