Extending the Child-Centered Ethics Framework: Researchers' Reflections on Multiple Projects with Children and Teenagers

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Abstract

In this paper, we use the Child-Centred Ethics framework to critically reflect on the planning, implementation, and impact of twelve (2-4 year) projects with children (ages 2-18 years) in Finland, the UK, India, Japan, and the USA. Our analysis reveals diverse ethical challenges and experiences: adapting materials based on the abilities, interests and agendas of the children, teachers, and schools, considering consent and assent as continuous processes, and exploring impacts beyond the project duration. We also discuss handling data ownership among participants and international collaborators, and managing difficult situations that arise, such as, participants pushing the boundaries of technology and people, technical breakdowns, and in situ negotiations of roles among teachers and researchers. We use our analysis to extend the CCE Framework in two distinct ways; incorporating adult stakeholders and impacts beyond a projects' lifecycle. Our work contributes to research on ethics in Child-Computer Interaction (CCI) research, addressing how to plan, implement, and create an impact in CCI projects with children.

CCS Concepts

• **Human-centred computing** → **HCI theory, concepts and models**; • **Social and professional topics** → **Children**.

Keywords

Child-Centred Ethics, Child-Computer Interaction, Children and Technology

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1 Introduction

The declaration of the Rights of the Child states: "*the child, by reason of his physical and mental immaturity, needs special safeguards and care, including appropriate legal protection, before as well as after birth*", considering everyone under 18 to be a child[1]. As the number of publications involving child participants within the Human-Computer Interaction (HCI) community has grown, this has sparked increasing interest in the ethical issues around conducting research with children as well as in ensuring children's participation is well supported. As summarized in literature reviews (e.g., [53, 83]), the community has addressed formal research ethics practices quite extensively, with some, but slightly less, consideration being placed on participation and design ethics [83]. Several general ethics frameworks for co-design with children have been proposed [63, 64, 78], and ethical issues around AI and emerging technologies have also been explored [1, 23, 30, 40, 74, 87]; but within these works practical guidance is limited. In 2025, Read et al. [59] brought together key prior work into the Child-Centred Ethics (CCE) framework, which provides a practical guide for considering ethical issues in the key phases of studies involving children. The CCE Framework was published as a living document to be built upon by the HCI and Child Computer Interaction (CCI) communities.

In this paper, we used the CCE Framework to reflect on twelve past and ongoing projects with 2-18-year-old children in Finland, the UK, India, Japan, and the USA. Our analysis reveals diverse ethical challenges and experiences which both confirm the elements in the CCE Framework, and raise new concerns and challenges. We contribute these reflections to the community as a series of insights and themes as well as deliver two extensions to the CCE framework with regard to adult stakeholders and future impact of research with children.

2 Related Work

In this section, we present related work on the participation of children in research, discuss how the CCI community has studied ethics, and summarise the use of practical reflections in HCI.

2.1 Children's Participation in HCI

When the HCI community first started embracing the inclusion of children in its field, it built on a wealth of literature outside of HCI, most notably from social sciences around the participation of children in research, where, as early as 1992 questions were raised around the optimal ways to capture children's voices and give them as much agency as possible [26]. In 1996, Morrow and Richards [51] was already highlighting many practical child-centred issues with regard to participation, such as informed dissent and the need to acknowledge that there were power differences in such work. In CCI and HCI, because children's participation is almost always facilitated by adult gatekeepers [62], close attention has been paid to ensure that, where possible, children's participation includes assent and fair means for inclusion. Themes of empowerment and inclusion (e.g., [22, 32, 39]) have often been explored in HCI work as well as papers on practical ways to enhance participation (e.g., [63, 64, 78]); many of these papers highlight issues such as power dynamics, recruitment, informed consent/assent, attribution, ownership, and impact, which are significant issues in any project entailing participation of children. The notion of ethical symmetry, as an ideal to aim for when working with children Christensen and Prout [11], aligns closely with the participatory design tradition in HCI, which has also greatly influenced how children participate in its work; in seeking to ensure children have a voice, many have proposed new methods to engage children (e.g., [31, 45]) and have sought ways to maximise the value to children in participatory work (e.g., [38, 42]). These papers all carefully consider the child's effort and the child's contribution as a point of concern, which we echo in our own reflection in this paper.

2.2 Ethics of Participation

In CCI, ethical questions related to working with children have been widely studied, with various approaches and foci. Review papers show the community's concerns with procedural research ethics and associated formal ethics reviews and approvals (e.g., [83]), as well as concerns about what it even should be designing, amplified with the rise of AI [12, 23, 74, 87] and other emerging technologies [1, 29, 30, 40]. Our study aligns with the notions of micro ethics and everyday ethics, with moral decisions being constantly made and negotiated as part of everyday activities. Such approaches underscore the subtle, context-specific, and relational aspects of ethics [79] and stress how ethics is intertwined with our everyday doings and practices [83]. For instance, Spiel et al. [79] reflect on how micro-ethics manifests, and is negotiated, in interactions with children and researchers, especially when it comes to more vulnerable and marginalised children, including neurodiverse children. Such contexts are very sensitive to the role of adults in the context of participation and the power dynamics at play [85]. As Vasalou et al. [85] examine in their work with neurodiverse children, researchers can be co-designers in one instance, and take on the role of care-giver if need be, in another. Then again, work in the Global South also reveals the sensitive balance between power and participation, within complex social hierarchies [8, 71]. Therefore, such ethics is emerging and unfolding in everyday life, in mundane situations, without the explicit focus of 'doing ethics' [23]. Despite the CCI community's interest in ethics, guidance for application of ethics in practice has not gained much interest yet; even though the need for guidance beyond passing a formal ethics review has been identified [59]. Thus, the CCE Framework [59] was developed to provide the CCI and wider HCI communities with inspiration and signposting to the practical application of ethics when conducting research with children.

[1] https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-child. Other terms such as teenagers, adolescents, and young children have been used in this paper to represent specific ages groups with regards to specific projects.

2.3 Use of Reflection as a Tool in HCI

Reflecting on past projects is an essential tool for discovery and critical analysis. Generally, reflections are done soon after a project ends and often look at a single project to distil insights. Reflection can assist in determining if a design method was actually employed as intended, as in [6] where the extent to which the project could be described as participatory was examined. In research through design [91], reflection is intended to improve design outcomes and this typically leads to better designs. Thinking beyond an individual project, Dourish et al. [16] proposed reflection as a means to identify issues and challenges around critical technical practice and in CCI, Fitton et al. [20] reflected on methods employed in a multi-year project to develop nine guidelines for design work with teens. These latter uses of reflection mirror our own approach in this paper, which is to inform but also to provide practical guidance. We also consider reflection necessary to identify where we can learn from our actions, similar to Rukmane et al. [66] and Baumer et al. [5].

3 Research Design

Our study aims were to reflect on our past work while also seeking new insights that could be used to assist the CCI community in their research practice. We chose to use the CCE Framework to support our reflections with the aim to also partially validate and extend the framework. The authors of the CCE Framework [59] recognized the limitations of the initial literature search that informed it and openly advocated the framework as a starting point in the process of providing such a resource to the community. They see the framework as a *living document*; and so we aimed to evolve it in this work. We apply the legitimate approach of reflecting on experience and expertise as a means to develop the framework further, acknowledging that other methods, including testing in case studies, validation studies, or further literature review may all also be beneficial next steps [48].

In the following sections we describe the tool used for analysis (the CCE Framework), the projects that we examined, the participants in the projects, our author positionalities with respect to our collective experiences in Child-Computer Interaction (CCI) research, and our data collection and analysis processes.

3.1 A Brief Description of the CCE Framework

The CCE Framework [59] was informed by a systematically selected set of 90 research papers, mainly from the ACM Digital Library. Twenty six of those papers contained tangible practical insights into the involvement of children in HCI research or described tools that could assist; these papers informed the framework. The framework is presented as a sequence of eight distinct chronological phases to better support the timely consideration of appropriate ethical issues (see Appendix A for the framework). These phases incorporate the typical planning and Institutional Review Board (IRB) application activities (phases one and two respectively), and include key concerns to reflect upon before the study, during the study, immediately after the study, later after the study, during data analysis, and after data analysis (phases three to eight). The framework also provides questions to prompt reflection and useful resources (tools and ideas). For instance, there is a concern regarding "The value of inclusion of children" during the Pre-Planning Phase and the related question(s) to that concern include *"Is it appropriate to include children in this work?"*.

3.2 Overview of the Projects

We present an overview of the 12 projects analysed for this paper, and then provide some notes on the management of these with regard to sensitive topics and other issues. Project and participant details for all twelve projects are listed in Table 1.

3.2.1 Details of Each Project. The projects were selected on the basis of them having been completed (at least once in cases where these were annually recurring projects), and having been lead by one of the authors. With regards to the CCE Framework [59], none of them featured in the 26 papers that informed the framework.

Accessibility of Tablet Games (ATG): This project was commissioned by a major UK organisation to investigate how children with multiple disabilities used tablet games in their homes. The project involved 20 families with children aged 2-14 years with a range of cognitive and motor impairments. A mixed method approach was taken using a combination of surveys, 2 week diaries, interviews, and 2 hour observations. The aim of this work was to understand the unique needs of these users to help inform the inclusive and accessible design of future tablet-based games for all. Children and their families acted as informants in this project, with the parents playing a crucial role in enabling communication (often acting as interpreters) between the research team and the child.

Designer and Maker Identities (MAD)[2]: In this four-year Finnish project, over 100 children and adolescents from seven classes (ages 7-14 years) explored their designer and maker identities through hands-on tasks involving a local digital fabrication lab [34–36, 86]. Working in groups, attending multiple weekly sessions throughout a semester, participants imagined technological solutions to reduce bullying in schools and created dramas and activism campaigns to present their solutions. Participants acted as co-designers, and researchers moderated the sessions with class and/or ICT teachers' support.

Participatory AI with Children (PAIZ)[3]: In this three-year project, 200 children (10-14 years) from Finland, India, Japan, and the USA participated in six-hour workshops spread over multiple days [72–74]. They explored Artificial Intelligence (AI) in their everyday lives through hands-on activities, using Teachable Machine and generative AI, imagined future classrooms and created tangible artefacts of their envisioned entities, and discussed ethical implications of these imagined futures. Participants acted as co-designers, and researchers moderated the sessions with teachers' support.

House of Stories (HStories)[4]: This two-year project in Finland, with 140 teenagers (13-16 years) from 18 classes in six schools, supported children's and adolescents' reading and writing skills through game-based storytelling in a virtual learning environment in participatory design workshops [55, 82]. As part of the game development process, participants co-ideated, co-designed, and tested their games in two 45-minute sessions. They acted as co-designers, and researchers moderated the sessions with the support of class teachers who supervised the pedagogical safety (for virtual

[2]Project webpage: https://interact.oulu.fi/mad
[3]Project webpage: https://interact.oulu.fi/paiz
[4]Project webpage: https://interact.oulu.fi/tarinatalo-en

Table 1: Overview of the projects and participants. *English was used/is used also in non-native-English countries when working with an International School or when the research is part of English lessons.

Project Location	Project duration	No of participants (ages in years)	Workshop duration	Language(s) used	Participants' roles; Role of adults
Accessibility of Tablet Games (ATG)					
the UK	2 years (2016-2017)	20 families (2-14)	2-week diary 2-hour observation and interview	English	Informants; Researchers worked with families, parents supported participation
Designer and Maker Identities (MAD)					
Finland	4 years (2019-2023)	149 (8-14)	Multiple weekly sessions for one semester (7 classes in 3 schools)	Finnish, English*	Co-designers; Researchers moderated, class & ICT teachers supported
Participatory AI with Children (PAIZ)					
India, Japan, Finland, and USA	3 years (2021-2024)	200 (10-14)	6 hours over 2 or 4 days	Hindi, Japanese, and/or English	Co-designers; Researchers moderated, class teachers supported
House of Stories (HStories)					
Finland	2 years (2023-2025)	140 (13-16)	2 x 45-min sessions (18 classes in 6 schools)	Finnish	Co-designers; Researchers moderated, teachers, experts, uni students supported
Technology Protagonism (FutuProta)					
Finland	4 years (2022-2026)	40 (11-12)	9 weekly sessions, 20 hours (2 classes in one school)	Finnish, English*	Protagonists; Researchers moderate, class teacher supports
Research Methods with Young Children (YoungRM)					
the UK	3 years (2023-2026)	100 (2-4)	Multiple weekly sessions, 40-50 minutes	English	Informants; Researchers moderate, teachers and preschool staff support
Critical Change Labs for Building Democratic Cultures (Critical ChangeLab)					
Finland	3 years (2023-2026)	83 (11-18)	varied from 2-10 hours	Finnish, English*	Co-researchers; Researchers moderate, teachers and youth workers support
Justice-oriented data literacies (Critical DataLit)					
Finland	4 years (2023-2027)	84 (11-17)	Multiple sessions of 3-4 hours (5 classes in 3 schools)	Finnish, English*	Co-researchers; Researchers moderate, teachers support
6G Smart Schools (6GSS)					
India, Finland	4 years (2023-2027)	98 (12-14)	2-hour workshops	Hindi, English*	Co-designers; Researchers moderate, class teachers support
Transformative Agency & Emergent Technologies (TakeOver)					
Finland	4 years (2024-2028)	18 (14-15)	45-min sessions weekly for 12 weeks	Finnish, English**	Protagonists; Researchers moderate, ICT teacher supports
AI Awareness Talks (AITalks)					
Finland	3+ years (2023-onwards)	100s (10-16)	20-30 min expert talks	Finnish, English*	Participants; Experts present to classrooms, class teacher supports the q&a
AI Youth Ambassadors (YA)					
Finland	3+ years (2023-onwards)	78 (15-17)	2-week program (60 hours total)	Finnish, English*	Co-researchers; Researchers moderate, participants come to the university

environments). In addition, several bachelor and master students and experts, with backgrounds in pedagogy, game design, sound, graphics, and coding, supported the game design process.

Technology Protagonism (FutuProta)[5]: This ongoing four-year project in Finland focuses on exploring how future citizens, as private persons, employees, entrepreneurs, or policy makers, take an active role with technology in order to question the use of technology, ask for socially sustainable solutions, or even design such technologies themselves. 40 children (ages 11-12) have participated so far in examining their own daily technology use practices in nine weekly design workshop sessions [25, 43, 44, 75]. The project also engages youth and young adults. Participants act as protagonists, and researchers moderate the sessions with teachers' support.

Research Methods with Young Children (YoungRM): This ongoing three-year project in the UK explores the design and adaptation of research methods when conducting research with very young children (2-4 years). The work focuses on ethical areas such as consent, assent, and anonymity. The research is conducted in the classroom during multiple 40-50 minute long weekly sessions using new and novel methods of data collection with a focus on informing the community of the unique characteristics of conducting research with children of this age group. A hundred children have participated in this project so far. Children act as informants, and researchers work closely with teachers and preschool staff who manage the experience of the children (and researchers) and act as co-researchers where appropriate.

Critical Change Lab (Critical ChangeLab)[6]: This ongoing three-year project in Finland focuses on strengthening youth participation in society using participatory, creative, and critical approaches with 83 children and youth aged 11-18 years [18, 28, 44, 52]. The participants from both formal and non-formal education organizations are actively engaged in reflecting on past, present, and future of societal challenges that are relevant to them and are invited to rethink democratic systems and make justice-oriented transformations. By positioning children and youth as active contributors, it explores how democratic culture can be fostered within educational and societal contexts. Participants act as co-researchers, and researchers moderate the sessions with teachers' and youth workers' support. The youth workers are part of an external organisation participating in the project.

Critical Data Literacy (Critical DataLit)[7]: This ongoing four-year project in Finland explores youth's data literacies, with an emphasis on supporting social justice in the context of digital citizenship educatio [2, 3, 18, 24, 44]. The project uses creative practices building on storytelling and critical making, as well as futures methods, to understand how young people (11-17 years) perceive their futures in data-driven systems and to foster their capabilities of action in the futures they want to live in. 84 participants from five classes in three schools have taken part so far in multiple sessions acting as co-researchers. Researchers moderate the sessions with the support of the class teachers.

6G Smart Schools (6GSS)[8]: This ongoing four-year doctoral research project in Finland and India explores the role of emerging technologies, such as Generative AI, AR/VR, and Robots, on the future of schools and schooling with children (ages 12-14 years) and teachers [69, 70]. Participants imagine future schools and classrooms and critically examine what learning will entail in the future through two-hour workshops. Participants act as co-designers, and researchers moderate the sessions with the support of the ICT teachers. A total of 98 participants have taken part so far.

Transformative Agency & Emergent Technologies (TakeOver): This ongoing four-year project in Finland empowers children to develop transformative agency, that is, the ability to think critically about technology, imagine alternative futures, and take action to improve the society they live in. The project integrates ethics, critical thinking, and activism to inspire participants to shape technology for a more just, sustainable, and inclusive world. Weekly workshops with eighteen 14-15-year-olds have been conducted over one semester (twelve 45-minute sessions as part of the ICT class). Participants act as protagonists for social change, and researchers moderate the sessions with the support of the ICT teachers.

Outreach AI Awareness Talks (AITalks): While technically not a project, several researchers participate in the annual spring AI Awareness Talk where experts visit local schools and classrooms for short (20-30 minute) talks in Finland. These talks started in 2023 and have continued since with tens of talks, reaching hundreds of children (grades 4th - 9th / 10 - 16 years old) each year. Children and adolescents are participants in these expert held sessions, while class teachers support the q&a parts.

AI Youth Ambassadors (YA)[9]: This two-week (in total 60 hours) program on critical AI literacy in Finland has run every summer since 2023, where so far 78 teenagers (15-18 years) have participated in diverse workshops [23]. Participants explore technical, ethical, and societal implications and impact of AI, including technical deconstruction of LLMs and training their own babyGPTs, developing business plans and ideas for solving real-world issues using AI (or other types of technologies), and critically scrutinizing biases and discrimination in existing AI applications and systems. Participants act as co-researchers while the researchers moderate the sessions.

3.2.2 Notes on Management of the Projects. Some projects involve(d) potentially sensitive themes such as bullying and racism (e.g., MAD, Critical ChangeLab, TakeOver), for these we work closely with class teachers or youth workers to assess whether particular groups are appropriate to involve [35, 86]. Teachers help identify and recruit groups where there are no active or acute cases of bullying, discrimination, or conflict, to reduce any risk of triggering distress or amplifying existing issues. Session plans are shared with teachers and other adult facilitators and modified according to feedback to ensure clarity and appropriateness of tasks and language, and to ensure all activities approach sensitive topics at a general, community level rather than at the level of personal disclosure. Participants are introduced to sensitive themes using anonymous tools (refer e.g., [47]) that allow them to comment broadly, in a detached way, on issues such as how bullying or racism affect their environment, who should respond and what support exists. At the outset of each session, researchers emphasis that participants are not expected or

[5]Project webpage: https://interact.oulu.fi/futuprota
[6]Project webpage: https://interact.oulu.fi/critical-changelab
[7]Project webpage: https://interact.oulu.fi/critical-datalit
[8]Project webpage: https://interact.oulu.fi/6gsmart-schools
[9]Project webpage: https://interact.oulu.fi/ai-ambassador

required to share personal experiences and that contributions must remain general or hypothetical.

Our project activities are designed to minimise emotional risk, but we recognise that these discussions can evoke strong reactions. The teachers and youth workers at the schools (for projects MAD, TakeOver, Critical ChangeLab) have direct access to counsellors and can refer children if concerns arise. These adults know individuals' histories and needs, and monitor wellbeing, while researchers guide the activities and adjust the pace or content as needed. We acknowledge that the absence of dedicated mental-health professionals on site is a limitation. More broadly, this highlights the need for CCI researchers to plan for potential emotional escalation, to establish referral pathways, and to consider, with support from frameworks such as the CCE, whether sensitive-topic research is appropriate in contexts without embedded professional support.

In our projects, we are also sensitive to the linguistic and cognitive skills, as well as the cultural experiences of the children. We have adjusted language in e.g., TakeOver, YoungRM, PAIZ, and 6GSS to meet the needs of the children; including translation where appropriate. We are aware that language barriers and cross-cultural nuances are areas that require careful planning.

3.3 Participant Recruitment and Demographics

Participants of the projects examined are children and young people from Finland, India, Japan, the UK, and the USA. They participated as co-designers, co-researchers, and as protagonists of their technologies-imbued presents and futures [32, 39]. Table 1 presents an overview of the projects and participants. In ten of the projects, schoolteachers volunteered their classes to participate, often from schools where the CCI researchers had / have ongoing collaborations. For ATG, recruitment was carried out through a national charity, a specialist play centre, and a specialist school. For YA, an open call for participation was advertised in the local city webpages for local teenagers applying to the city-supported summer jobs program. Except for YA there was no compensation, whether monetary or in-kind. In YA, teenagers (ages 15-17 years), were provided vouchers from the local city to gain employment experience for two weeks (60 hours in total) and were compensated for those work hours (minimal salaries).

3.4 Authors' Positionality

Authors of this study are senior, mid-career, and initial stage researchers. The senior researchers each have over two decades of experience working with children and young people. All the mid-career researchers have over a decade of experience conducting participatory design, and/or STEM-style workshops with children and youth, and the initial stage researchers have between two to five years of experience conducting participatory work with children. All the authors have practical experience of planning and conducting participatory design workshops with children in many different countries including Finland, the UK, Iceland, Malaysia, India, Japan, UAE, and USA. In addition, the authors have diverse educational (cultural anthropology, humanities and education, information systems, computer science) and cultural (Finnish, Indian, British, Pakistani, Iranian, Spanish) backgrounds giving them a wide perspective to view ethical considerations and, with their individual experiences and accustomed practices, the ability to provide diverse perspectives to the research in focus.

3.5 Data Collection and Analysis

Data were collected and analysed in two phases using collective and individual reflections over two months. In the first phase, we met weekly for an hour for collective decision-making and reflection, and spent several hours each outside of these meetings on individual reflection. There were at least eight authors present in each meeting and each author participated in at least one weekly meeting. There were follow-up emails every week after the meetings with the next tasks and summary of discussions, thus, discussions were also held over emails. Initially, we met to discuss the different perspectives of the CCE Framework [59] to ensure all authors were familiar with it and had a shared language around ethics. We then used a shared Excel sheet, with the CCE phases and concerns as column headings, to capture our individual reflection for projects we were involved in, adding one new row for each experience and/or example. In subsequent weekly meetings, we went through the rows of examples and collectively reflected on the experiences, challenges, and insights that arose from those challenges, making notes of other similar experiences in other projects. This process of individual and collective reflection continued for five weeks. In addition, we also reflected on the roles and experiences of the various adult stakeholders in each project. Since some reflections were made several years after the projects ended, discussions also included experiences and examples of impacts beyond the project, which were then added to the Excel sheet.

In the second phase, the collated findings from phase one were categorized into eleven insights (subthemes) using thematic analysis [9]. This was done in several steps, where first we collectively started to categorize our phase one findings, then continued individually to categorize the remaining data. Lastly, in our final data analysis meeting, we went through those individual categorisations to collectively agree on a final set of insights. In the process of writing this paper, for which the authors continued to meet online, we collectively grouped the insights into five overarching themes: 1) Impacts Beyond the Project; 2) Adapting to Abilities, Interests, Agendas for Teachers and Children; 3) Consent and Assent as a Continuous Process; 4) Navigating Difficult Situations and Improvising in Situ, 5) Data Sharing, Reporting, and Ownership During and After the Project. We discuss and present the five themes and eleven insights next.

4 Findings

In this section, we present the five themes and 11 insights emerging from our thematic analysis. For each insight, we also highlight the concerns and key findings that became additions to the original CCE Framework (discussed in section 5).

4.1 Theme 1: Impacts Beyond the Project

The projects analysed in the paper are of different durations and start times, including three projects that ended several years ago (ATG, MAD, PAIZ) and one that is about to end (HStories). We reflected on the short- and long-term impacts of these projects (and

others) on the participating children and teachers, on schools, and on the community overall.

4.1.1 Insight 1: Impacts on Participating Children and Their Parents, Teachers, and the School Community. In general, impact beyond the project is challenging– it is seldom something that can be designed and it is typically not well understood when a project begins.

One of the most straightforward ways of impacting the participating children and the school community is by defining impactful goals and themes for a project. For example, in MAD, after talking about bullying with children in research sessions regularly for several months, the children recognized bullying incidents at school, tried different mitigation strategies, and started to intervene and report it to teachers using expert vocabularies. Thus, the project inspired children's behaviour and attitudes, and this impressed teachers and parents. Projects can also potentially impact others; in PAIZ, children's designs were displayed in their classrooms to showcase to the school and parents in the upcoming parent-teacher-meeting. In MAD, the laser-cut anti-bullying slogans and signs and in Critical ChangeLab posters on bullying and racism were showcased on corridor walls to seek impact on the whole school community. In ATG, the research findings changed the way the company built children's software and made that software more accessible.

We have also sought impact through gifting things and opportunities to teachers. For example, in MAD and PAIZ, we designed the research materials, the assignments, and tasks so that they could be published on the project webpages and made available for teachers to share with others, for example, participating teachers sharing with their colleagues. In MAD, researchers also made a video of the children's dramas and other activities that the teacher shared with parents during festivals at the school, extending the impact on parents. In PAIZ and 6GSS, we demonstrated the Nao robot to a large number of school children after finishing a workshop with one of the classes.

Another way of strengthening the impact beyond project is by maintaining the connection between the researchers and the participating children. In PAIZ, we printed information booklets for children (in English and Japanese), which included the main workshop topics and names of all the tools used, and researcher's name, details, project webpage link (with a QR code). Building on our relationships with schools, we also actively give expert talks on various topics (AITalks), which is another great way to inspire children.

Key findings: We consider impact on the children, school, and community in different ways, where some of have been more fruitful than others, such as considering *impactful goals and themes* for the project and what can we *gift to the teachers* or *leave for others to see and use*. We also encourage researchers to consider how to *maintain a connection with the children* we worked with. These considerations do not fit within the existing phases of the CCE Framework, thus we proposed a new phase, which is discussed in section 5.

4.1.2 Insight 2:Impacts to Society and the Future. While short-term impacts to participating children and teachers are often embedded within the goals of the projects, long-term impacts of participation often go beyond the classroom. Our reflections highlighted that much of our work in CCI is education focused and making an impact beyond the local context is difficult. One approach is to extend projects into other areas with pan-national studies but even then, impact into curricula and such is difficult.

At the societal level, sharing research with a broader audience, building rapport with the local community, and inspiring the younger generation are important goals for researchers as these goals have the potential to impact society at large. For instance, in MAD, children's changed attitude towards bullying potentially impacts them and their (non-participating) peers and siblings long-term, leading toward futures where bullying is handled expertly and maturely. Engaging participants as experts, as co-researchers and panellists (Critical ChangeLab), also has the potential to create lasting positive change in the way they see and act in the world. By exhibiting and sharing children's designs and ideas outside of the school (Critical ChangeLab), and building on those ideas to develop real world applications (MAD), researchers can impact the entire community.

Key findings: Creating lasting impact with our research can be country-specific, with *differences in curricula* being one example of that. Researchers also often consider that collecting, analysing, and reporting data from projects moves research forward and that is a central impact of their work. However, we believe that researchers' role within society goes beyond projects and we should *share with broader audiences* and *inspire the younger generation*. As we disseminate to children, we should remember to disseminate also to their parents and their communities.

4.2 Theme 2: Adapting to Abilities, Interests, Agendas for Teachers and Children

The theme of matching and adapting to the abilities, interests, and agendas for children emerged in multiple projects. This insight appeared throughout the research process, from planning and informed assent to participation and post-study impact. We also extend this to teachers in particular and their possible agendas. Projects navigated these tensions by addressing communication, inclusion, activity alignment, tool selection, and recognition of children's contributions.

4.2.1 Insight 3: Adapting Research Work to Teachers' and School's Teaching Curriculum and Activities. In most of the projects, participants were recruited with the help of teachers or city administrators via personal and professional networks. These stakeholders bring their own agendas and expectations to the research with children, and it can often be unclear how teachers or schools wish to integrate the research sessions into their curriculum or how to tailor the research topics, activities, and goals to fit their agendas. Teachers might have agendas that do not fully align with the researchers' proposed topics, making it necessary to invest significant time to identify overlapping goals. Teachers might provide a list of requirements, such as tools to use or topics to cover, to researchers to incorporate in the sessions; or they may want a certain group to participate– in such instances the researchers need to be flexible. For instance, the TakeOver project was integrated in the ICT lessons for 12 weeks in the Spring semester. Therefore, researchers worked closely with the ICT teacher to ensure that the learning objectives for the ICT course were met through the project activities. In YoungRM, the initial content had to be revised after it was found that the children had already progressed beyond that stage

in their curriculum. In PAIZ, the Japanese school wanted to include all three 6th grade classes in the research work, while originally the researcher had only planned to work one class. While this was a happy surprise, working with three classes impacted the project budget, such as, materials required, costs for services, and the travel duration.

Teachers can also become allies of researchers, especially when a research team works with them over several years– in this way we can develop champion teachers. In AITalks, every year the same teachers reach out to the project team for a new series of talks, and in YoungRM the school had previously held two STEM sessions thus becoming known to the research group. In PAIZ, participants in Finland were recruited with the help of teachers from the MAD project, since the one of the researchers worked in both projects. In another such instance, the teachers involved in the AITalks proposed their class for involvement in the Critical ChangeLab project.

Key findings: Co-developing activities and agendas with teachers through *open and early communication* helps ensure that research meets both the schools' curricular needs and the children's learning goals, reinforcing the importance of collaboration early in the process. This ensures that participation is valuable to schools and teachers, and thus, also to the children. It also enables researchers to enter a classroom, which is otherwise quite challenging, thus directly impacting children's inclusion in research projects. Being *flexible* to be able to adjust the research plan if things change and minimising additional work for the teachers, both help in *building a rapport with teachers and schools*, who then welcome us to their classes also in the future.

4.2.2 Insight 4: Adapting Research Work with Children's Interests and Abilities. A main theme in many projects was ensuring that project activities align with children's interests and abilities, and their access to tools and technology, as also mentioned in the CCE Framework. During the planning phase, challenges included researchers not knowing participants' interests, technology skills, and language preferences beforehand (Critical ChangeLab, Critical DataLit, HStories), adjusting activities for non-reading children (YoungRM), and going 'cold' into families of children with disabilities entirely unaware as to how the child might manage the planned activity (ATG). There was also uncertainty about which digital tools were allowed in classrooms and homes (Critical ChangeLab, TakeOver, AITalks, ATG). In an ideal world, we would have knowledge of children's interests and preferences and be able to adapt activities to align with them. In the Critical ChangeLab project, we conducted co-design sessions with the different project stakeholders – researchers, teachers, and youth workers (who were part of a participating public organisation) and subsequently replaced podcasts with collage-making, and negotiated tool choices with schools. In several other projects (PAIZ, Critical ChangeLab, Critical DataLit, TakeOver, AITalks), teachers shared children's interests with the researchers to guide the project activities.

Inclusion can be further supported by adapting activities to special needs, and by managing multilingual contexts; for instance, in PAIZ and 6GSS, when working with children in India, both Hindi and English are used since classrooms in India are multilingual. Similarly, for PAIZ sessions in Japan, both Japanese and English were utilised. In multilingual, multi-national projects (PAIZ, 6GSS), the research team also consists of multilingual, multi-national researchers who speak the local language(s) with native proficiency. In ATG, there had to be an entirely flexible approach to the planned evaluations on iPads as this task was too challenging for some children– in these cases we substituted the official planned activity with an alternative– offered just for fun. We also reflected on diversity in engagement, recognizing that not all children participated equally and that flexibility was required (FutuProta, TakeOver, PAIZ, 6GSS). That is, we cannot expect all participants to be engaged and contributing to every activity, especially since it is crucial that participants know that their participation is voluntary, and that they can decide how and when to participate.

Another way of inclusion that we have been practising is providing multiple accessible means of participation. For example, freedom to write, draw, doodle etc. This is important as participants are not always interested in writing while sharing their ideas and thoughts or might have varied writing skills and experiences. Writing also gives a more rigid, school like, feeling to the activities when it is crucial for children to be more critical and curious during these workshops. In the 6GSS project, participants presented their imagined future classrooms as drawings or writings, or a combination of both. In YoungRM, writing was not even considered and children contributed through physical activities rather than on pen and paper. Even if able, some participants might be hesitant to present, discuss, or share their ideas in front of their class, in which case, using digital tools, like Menti or Padlets, allowed for anonymous replies without any sign-ups, enabling students to share their ideas and voices without fear of being judged (as was done successfully in MAD).

In some projects (TakeOver, Critical ChangeLab, YA), participants were included as co-researchers where they selected the topics that are interesting to them for the project activities. This includes the Critical ChangeLab project where participants collected data (via screenshots), analysed that data (using thematic analysis), and decided which topic they were most interested in analysing and exploring in detail.

Key findings: Greater inclusion can be facilitated by being *adaptable and accessible in regards to abilities, needs and contexts*, by having *alternative activities* ready and *multiple means of participation* to ensure all can participate, even if they cannot do the planned activity, and recognising that some children will choose to not participate and that is okay. *Inviting children to be co-researchers and decision-makers* within a project's topics and themes increases children's agency with regards to their participation.

4.3 Theme 3: Navigating Difficult Situations and Improvising in Situ

The CCE Framework, in phase five, asks the researcher to immediately reflect on what might have gone wrong. There is far too little written about things that do not work [66], yet learning from mistakes is essential. Even with the best planning, there can still be difficult situations that arise during the sessions that require improvisations in situ. In projects involving children, researchers are often placed in challenging situations related to the participants, teachers, and/or the technology used.

4.3.1 Insight 5: Participants Pushing Boundaries. When given high levels of creative freedom, participants may sometimes knowingly or unknowingly push the boundaries of what is socially acceptable. Underage participants might produce inappropriate or questionable content such as vulgar or disrespectful or racist language, or even pornographic imagery while receiving approval and validation from their peers.

We need to be mindful that some activities might increase the risks of boundary pushing. Our experiences suggest that tasks involving the use of generative AI tools may be a risk factor leading to these dilemmas. As an example, when a teenaged participant in the TakeOver project experimented with prompting different language models, participants decided to attempt "jailbreaking" the models to respond in unintended ways. One participant wanted to see how different models would respond to a prompt to fill in the blanks to the word "n_gge_." As the predictive models assumed that it was asked to respond with a racial slur, it refused to fill in the blanks on that basis. The participant then stated that the word they were looking for was in fact *nugget*, to which the models responded in a reaffirming and apologetic fashion. Even though the participant appeared to be critically testing if the models were biased to either interpret or use such language without a racist or discriminatory motive of their own, even alluding to such loaded terminology risks coming across as highly offensive or upsetting, especially in workshop settings with multicultural demographics. In MAD, children co-opted the anti-bullying activity and turned it around; using the anonymous Padlets designed for anti-bullying activities to call each other names.

General class management can be problematic when working in schools and this is mitigated by having experienced researchers in the research team and the right level of teacher support: Participants may be aware of the fact that researchers are not in a position of authority in relation to the school and use this to exert their own agency. With teens, the authority in a room can be very fragile. In one of the sessions from the Critical ChangeLab project where a teacher was not present, one participant left the class for a long period of time for undisclosed reasons, making it clear to the researchers that the researchers could not make them stay in the classroom. In certain situations, researchers can be at a loss as to what to do– in one instance, when using Virtual Reality technology (HStories), one student seemed to have difficulties orienting themselves back to reality and appeared excited and overstimulated by the experience. The participant kept walking back and forth and repeating "how impressive" the experience was. This observation highlights the need for careful monitoring of participants and preparedness for unexpected reactions, particularly when implementing new, in this case immersive, technology in school contexts.

Key findings: In cases like this, *preparations* such as checking that the *activities will not introduce additional risk factors* to poor behaviour and getting the right team with the *right level of teacher support* can help. Ultimately though, CCI researchers are faced with the difficult ethical decision of where to draw the line when deciding whether or not to intervene. Even if they choose to intervene, as researchers do not have direct authority over the participants, they rely on cooperating with the teachers to keep the sessions on track in cases of disruptive behaviour or otherwise unexpected situations. As such, it is up to the teachers, who also know the students and their backgrounds, to prioritize when to intervene. In some cases, researchers may even be frustrated by the teachers choosing not to intervene in perceived problematic situations, as described next.

4.3.2 Insight 6: Negotiating Roles and Responsibilities Between Teachers and Researchers. Our findings show that the division of roles between teachers, researchers, and facilitators requires careful negotiation both before and during project activities with children.

During the study phase, the boundaries of responsibility become blurry. For instance, in the Critical ChangeLab project, which had researchers, facilitators (adults from a participating organisation who were not researchers), and teachers present in the sessions; in some cases, youth workers who were facilitating the session had to step in to manage sensitive emotional moments, such as when a participant became upset. Here, the facilitators' training in handling challenging situations was invaluable, as researchers lacked the expertise to provide immediate support. In this instance, negotiations of roles was pre-planned– there were co-design sessions before the actual workshops with researchers and youth workers from the partner organizations.

Other examples highlighted the limits of researcher authority and skills. For instance, in some cases not all children were equally engaged (FutuProta, TakeOver), and researchers faced dilemmas about whether to push for inclusion or focus on those more willing to participate. In some multilingual contexts, researchers had to rely heavily on assisting staff, but language barriers raised concerns about research validity when the lead researcher could not fully evaluate the interactions with children (FutuProta). Further complications arose when teachers stepped away from classrooms, leaving researchers to handle situations such as physical fights (FutuProta). Similarly, children's spontaneous demands—such as using GoPros for unrelated filming tested researchers' ability to maintain both order and trust. In one of the workshop sessions (FutuProta), we encountered a situation where a group of boisterous students began to misbehave, including the use of profane language and behaviours that disrupted the session's activities. Initially, the research team attempted to manage the situation by redirecting attention to the activity and reminding participants of the task at hand. However, this quickly proved challenging, as the disruptions affected the rhythm of the session and the overall atmosphere. The class teacher, who was present, intervened only when the behaviour had escalated considerably.

Key findings: Reflecting on these incidents, it is evident that the roles of researcher and teacher are distinct. The primary responsibility of the researcher is to engage participants, scaffold activities, and ensure that data collection proceeds in a respectful and inclusive manner. In comparison, the teacher holds the authority and familiarity with the students necessary to address disciplinary issues effectively. It is preferable to *ensure all parties understand each other's roles with pre-planning*. When teachers step in earlier to establish behavioural boundaries, researchers are better able to concentrate on their facilitation role and maintain the session.

4.3.3 Insight 7: Technological and Logistical Issues. Researchers conducting research with schools, children, and teachers often encounter technical challenges as these workshops unfold in the dynamic setting of homes, classrooms, or computer labs where

disruptions are common. Even seemingly minor technology issues can affect the flow of activities.

In most cases *technical mishaps can be foreseen* and good planning should reduce their occurrence. In one school we visited in India for the 6GSS project, the absence of an HDMI cable prevented researchers from showing visual material that was meant to prime and scaffold participants[69]. This technical gap not only disrupted the session plan but also impacted the quality of discussions and the depth of the designs (artworks) the children produced, as they were not adequately guided into the creative process. In such situations, improvisation becomes essential. In this example, the team returned the following day better prepared, not just with the necessary technical equipment, but also with strategies to scaffold the design activities and ease participants into the workshop. In another instance, just before the planned travel to India for 6GSS, the Nao robot malfunctioned and required technical maintenance by its parent company, which took several weeks, requiring researchers to use a different robot. In the ATG project, a home with no wifi proved complicated for iPad tasks; this was circumvented with a personal hotspot and indeed personal hotspots are often the saviour of researchers trying to navigate internet connectivity.

Accounts can also be challenging to create; in YA and TakeOver, several participants had a difficult time setting up their accounts and laptops for a two-week summer job program to contribute to the workshop activities in the first session. In this case, participants were provided temporary login credentials to work in the university's IT environment, while they had their school laptops, and thus, had to manage and navigate two O365 environments at the same time. This was not an easy process and it took multiple trips to the IT help-desk, slowing down day-one activities for certain students. In the Critical ChangeLab project, participants unintentionally turned off a video camera during their group interview activity, and had to repeat the activity again the next day when researchers found the recording to be interrupted.

Key findings: As *most technical mishaps can be foreseen* it is important to focus on them in the planning stage as the more mundane practicalities can easily be overlooked. Getting accounts for children can be tedious, logging them in can prove very time-consuming. Wifi cannot be relied upon in many situations, so a back up plan of downloaded content and / or personal hotspots is often essential. For every workshop, both technical preparedness and researchers' sensitivity are crucial for ensuring that workshops remain meaningful and enjoyable while maintaining the session plans and activities schedule. Furthermore, several participants might require additional help in setting up their access to the technical devices or applications, which can also impact the timings and schedule, and what is possible in a session.

4.4 Theme 4: Consent and Assent as a Continuous Process

We reflected that consent and assent were typically not one-time events, but a process that continued before, during, and after the research activities. In all our projects, initial permissions from adults allowed for children's participation in the research activities, however children's voices, parents' roles, and schools' responsibilities highlight that consent/assent should be revisited throughout the lifecycle of a research project.

4.4.1 Insight 8: Child Assent and Dissent with Regards to Their Participation and Data. Informed assent and inclusion are key concerns when it comes to ethical practices in CCI. Issues arise such as how researchers can share relevant information with children and how children's contribution can be valued and shared respecting their privacy. Researchers must also be observant about how children show their assent and *dissent* during the research activities, and be prepared to handle situations when participants change their minds.

In our projects, several initiatives were used to *make assent child friendly*. In the Critical ChangeLab project, accessible consent/assent processes were developed. Researchers designed a comic strip to share the projects goals and agendas, expected outcomes, and participant rights and used youth-made videos to explain consent/assent. With small children in YoungRM, assent was facilitated in the design of the activities as the children were too young to understand – the activities all allowed children to wander off and do something else if they wanted to. There are complications when assent and consent don't align that need careful navigation. In the TakeOver project, we encountered a situation where a child first verbally indicated willingness to participate, but then repeatedly failed to return a signed consent form that they claimed had been signed by their legal guardian. As the research progressed, they eventually became visibly uncomfortable when asked about this, so we stopped asking and did not collect any data from this participant or their group. This reveals how children may be caught between balancing parental authority, researcher expectations, and their own wishes.

Reminding children that assent is not static needs to be designed into the study with an active focus on providing children the *means to assent and dissent*. When recording audio or video (MAD, TakeOver, PAIZ, and 6GSS), we intentionally announce the starting of video and audio recordings, giving the participants a chance to decide in situ, if they want to be recorded or not and place video cameras in such a way that only half the classroom is recorded. We should also be prepared for children to change their minds. In Critical ChangeLab, for instance, a child who had not assented at first later wanted to join fully, showing that children's agency evolves over time. It is also crucial to *protect participant privacy* while valuing their contribution. For example, when participants' work on sensitive topics, such as racism and bullying, was planned for an exhibition (Critical ChangeLab), we had to reflect on issues of privacy, recognition, and possible long-term consequences for participants. It was decided only to show the school's name, a decision we believe balanced visibility with protection, while still valuing the children's contributions.

Key findings: We have learned that it is not enough to collect forms; children's wishes regarding their participation in research must be prioritized with *child friendly assent mechanisms*, and even if parents have provided their consent for their children's participation, children need to be given the *means and opportunities to assent and dissent*. We emphasise here that it is crucial to ensure children understand they have agency to withdraw from research, and that we as researchers need to also be observant of dissent.

With regards to participation; privacy vs. recognition also requires attention and we need to protect participant privacy even while wanting them to be recognised for their work. Ongoing discussions about e.g., data ownership, sharing data, or opening it, and using AI tools for transcription or analysis exemplify that consent/assent remains relevant long after data collection has ended (discussed in section 4.5).

4.4.2 Insight 9: Permissions and Consent from Adults - Parents, Guardians, School Principals, and IRB Processes. Sending consent forms to parents is not without its own challenges. From selecting paper, online, or email based solutions to contacting parents, who might be too busy to respond, to collecting consent only from school principals.

While some parents still prefer printed forms, strategies like shifting towards digital consent forms, preparing translations in different languages, and explaining and reminding teachers about the importance of the forms before starting any sessions, moves us closer to making participation both inclusive and transparent. While practical solutions such as using digital consent forms can make it easier for parents to give permission, we realised through our reflections, that this may also reduce the pressure on children to mediate between researchers and parents (TakeOver, FutuProta). In HStories, teachers who were unfamiliar with the practicalities of research were handling the consent process. This resulted in inconsistent parental involvement and few signed consent forms being received. These experiences highlight the importance of recognising teachers as gatekeepers who themselves also need support and guidance.

In some cases, it can be challenging for teachers to reach out to parents to explain the research consent process and ask for signed permission slips. In our work in India (PAIZ, 6GSS), we follow a top-down approach for permission to work with a school, explaining the project to district level administrators through our local Indian collaborators. These administrators then decide which school we can work with, without sharing the basis of their decision. We then contact the school's principal and share the project information again, this time asking for signed permission from them. Thus, informed consent is collected from the school's principal, and the process of sending home consent forms is skipped due to varying levels of parental literacy.

An interesting observation was made about IRB processes, which differ considerably across different countries. Local laws and regulations around data privacy might also vary across regions. Navigating these differences is challenging and so it is something that should be checked early especially if different IRBs need differently designed consent processes for the adults. We did note that IRBs tend to not enquire about children's assent and assume, in most cases, that all legalities are covered by a parent's signature.

Key findings: Overall, our experiences show that seeing consent and assent as a continuous process creates more respectful and fair relationships between researchers, children, parents, and schools. It moves the focus from only following rules to also caring for participants: listening to their voices, protecting their rights, valuing their contributions during and after the research, and ensuring inclusion. We should strive to make informed consent from parents and care givers as *transparent and easy as possible* while recognising the very important role that *teachers play as gatekeepers*. While in some cases it might be difficult to obtain parental consent, we believe that to deny children participation, because of their parents' diverse levels of literacy, further propagates exclusion of those already more vulnerable and marginalised.

4.5 Theme 5: Data Sharing, Reporting, and Ownership During and After the Project

Across all of our projects, the questions of who owns data, how can it be shared, and what can be reported to different audiences have been a recurring ethical tension. The CCE Framework encourages transparency, reciprocity, and respect for children's contributions (phase seven), yet we repeatedly encountered moments where these values conflicted with institutional demands, logistical barriers, or practical constraints.

4.5.1 Insight 10: What to Report, to Whom, When and How. This relates to the uncertainties surrounding the reporting of findings to stakeholders. As a lot of different stakeholders are involved in our projects: children, teachers, schools, collaborators, civil service organizations, funding agencies, and research communities, the findings from our studies relate differently to all these stakeholders because of different goals and expectations. Furthermore, it can be challenging to give credit and recognition to the participants while respecting their privacy, when reporting and sharing findings and insights with larger audiences.

Children may value hearing how their ideas influence design directions, whereas schools and teachers often expect outcomes framed around educational values and learning goals, and funding agencies focus on project-wide deliverables. In some cases, the opportunity to report back to children is missed altogether. In the PAIZ project, for instance, outcomes could not be shared with the participating Japanese children because by the time of our return visit, they had graduated to high school, moreover the schools were closed for Golden Week. This highlights a structural challenge: research timelines rarely align neatly with children's schooling cycles. While researchers see value in closing the loop with children, school transitions and scheduling conflicts can prevent feedback from reaching the very participants whose voices shaped the work.

Deciding which findings to highlight, and in what language or format, is often a matter of negotiation. At times, this may lead to delayed or partial reporting, as researchers need to balance the needs of each group without compromising confidentiality or over promising impact. One approach is to provide a public dissemination of a project to a place where the participating children will see it; for example researchers can showcase students outputs and insights in a school exhibition or collaborate with other civil service organizations to share children's work, as we did in Critical Change-Lab. This can be useful when children participate anonymously to a project like they did in YoungRM.

Children, teachers, schools, and cities all contribute significantly to our projects, yet naming them publicly may expose them to risks, misrepresentation, or unwanted visibility. While media consent forms provide a formal mechanism to obtain permissions, each case still required careful consideration of when recognition is celebratory and when it might unintentionally bring harm. Similarly,

determining who "owns" the ideas generated in participatory design activities remains unresolved: are these children's ideas, school community outputs, or collective research artefacts? In YoungRM, we asked children what we should do with their ideas and had a conversation about where any profit from the ideas might go– whilst an unconventional conversation, it did forefront the notion of ownership of ideas for children.

Key findings: Given the multitude of stakeholders involved in a project, it is no surprise that there can be conflicting expectations on how to share and report the research data and findings and insights, while maintaining participant privacy and confidentially but still giving credit and attribution for participants' work and ideas. Even with participants' assent to share project outcomes, what this means in practice and how it impacts participants, needs to be cautiously determined and handled on a case by case basis. Where it is hard to know how to report back to children, *a public dissemination* might be a solution.

4.5.2 Insight 11: Who Owns the Data. While working on projects involving multiple stakeholders, ownership and copyright of project outcomes presented another layer of complexity. This also impacts the decisions regarding how data is shared and reported to larger audiences, which was discussed above.

In our experience, some funding agencies require copyright of all materials produced in projects while commercial partners might want some data restricted. This also clashes with the reality that some outcomes such as curricular material produced by partnering institution in another country can not ethically or legally be claimed by the project or its funders. The situation is further complicated in multi-country collaborations, such as in the PAIZ project, where ethics and reporting requirements varied across institutions and countries, often creating delays of several months. These negotiations revealed not only bureaucratic frictions but also deeper ethical questions about whose rules matter, and how to navigate power imbalances between institutions, local schools, and child-participants.

While open science practices encourage sharing raw data, metadata, or process data, doing so in child-centred projects raises unresolved concerns about what traces remain, how securely the data is stored, and whether children and their guardians fully understand these risks. One way of going about this that we follow in our projects is agreeing beforehand on the terms of sharing and analysing data with the multiple stakeholders. So that even when we have to share data, for example, for reporting or joint publications, we blur the faces of the participants and use pseudonyms for them.

The CCE Framework reminds us that children's contributions deserve recognition, yet academic and funding systems are not well equipped to honour such shared ownership. For example, to give credit where it is due but at the same time not expose the participants' identity; while exhibiting participants' ideas and inputs from Critical ChangeLab we did not mention their names but just the name of the school and the class to make sure that they feel that their work is valued and take pride in what they have accomplished.

Another concern is that the growing use of AI tools for transcription, note-taking, and analysis has introduced uncertainty. How do we evaluate the safety and ethics of emerging tools and how do we communicate these risks to participants in ways that are comprehensible and empowering?

Key findings: Together, these challenges underline that questions of data *ownership reporting, and sharing* cannot be addressed through a single policy or guideline. They are situational, negotiated, and often unresolved, requiring ongoing reflection and dialogue across multiple stakeholders, who often times might be situated in different countries. By foregrounding children's perspectives and rights within these negotiations, we are pushed to critically examine the infrastructures– academic, institutional, and technological –that shape what is possible, and to imagine more ethical ways of sharing knowledge and credit in child-centred research.

5 Extending the Child-Centred Ethics (CCE) Framework

In this section, we present our extension of the CCE Framework (CCE v2) as shown in Figure 1, based on our analysis presented in the findings (summarised in Table 2). We present our extensions to the CCE Framework phase by phase. Figure 1 shows the different stages of research ('When') on the left side and for each phase the associated ethical concerns ('Concerns'). Concerns regarding children are in oval boxes (with rounded corners) and for adults in rectangular boxes (with sharp corners). Grey outlining shows aspects from the original CCE Framework while black outlining show our new additions. To align with the construction of the original CCE Framework, we pose relevant reflective questions for each of the new concerns we identify.

5.1 Phase 1: Pre-Planning (Before IRB)

The CCE Framework highlights concerns of inclusion, diversity, harm, skills and training, and data as key to pre-planning any project with children [4, 10, 13, 56, 58, 60, 76, 77]. Our findings reveal similar concerns in addition to the importance of adult stakeholders (teachers, school staff, city administrators) as those who influence **inclusion** and **diversity** of children by deciding on, or volunteering, children for research projects. Adding to the questions in the original CCE Framework, we ask *Is it appropriate to recruit this teacher's class or this school? (inclusion)* and *Do we have access to / can we work with a different teacher or school? (diversity).* We ask (adult) researchers to consider already in this phase the differences in IRB processes between local ethical guidelines between different (participating) countries. We introduce a new concern for adult stakeholders - **collaboration**. For this we ask, *Do different project partners have differing IRB requirements?*

We also highlight **negotiation** as a concern - *Are the roles and responsibilities of the diverse adult stakeholders agreed on and clarified?* With a focus on children, we highlight two further concerns; the first is to explicitly include pre-planning of **reporting back** to children, as in our experience, and as detailed in the paper on reporting back this should be planned at the outset [61]. We ask, *How and when can we report back to the children? Where will this group of children be in a year, two years, three years from now?* We also encourage reflecting on the changes brought about by emerging technologies with regard to how we collect and analyse data, asking *will the use of AI tools compromise children's privacy?* The use of

Table 2: This table summarizes the five themes and eleven insights from our thematic analysis. It then connects the insights to the proposed concerns and the different phases of the CCE Framework.

Insights	Concerns	CCE Phases
Theme 1: Impacts beyond the project		
#1 Impacts on participating children and their parents, teachers, and the school community	(children) Connect, Inspire; (adults) Public Dissemination.	Impact beyond project
#2 Impacts to society and the future	(children) Connect, Inspire; (adults) Public Dissemination, Curriculum.	Impact beyond project
Theme 2: Adapting to abilities, interests, agendas for teachers and children		
#3 Adapting research work with teachers' and school's teaching curriculum and agendas	(adults) Communication, Activities, Flexibility, Champions.	Planning
#4 Adapting research work with children's interests and abilities	(children) Access; (children) Co-researchers.	Planning During analysis & write-up
Theme 3: Navigating difficult situations and improvising in Situ		
#5 Participants pushing boundaries	(children) Harm, Boundaries, AI tools; (adults) Interventions, Reflections.	During study Pre-planning During study Immediately after study
#6 Negotiating roles and responsibilities between teachers and researchers	(adults) Collaboration, Negotiations.	Pre-Planning
#7 Technological and Logistical Issues	(adults) Technical.	Planning
Theme 4: Consent and assent as a continuous process		
#8 Child assent and dissent with regards to their participation and data	(children) Dissent, Transparency.	Pre-study
#9 Permissions and consent from adults- parents, guardians, school principals, and IRB processes.	(adults) Consent.	Pre-study
Theme 5: Data sharing, reporting, and ownership during and after the projects		
#10 What to report to whom and when and how?	(adult) Public dissemination, Opening data.	Impact beyond project, Results known.
#11 Who owns the data?	(children) Reporting, AI tools; (adults) Ownership.	Pre-planning, Results known.

AI tools in research is still an evolving concern with universities and other organisations creating their own policies and guidelines, which must be followed, in addition to understanding how these tools utilise the data they are given and what possible privacy issues might arise.

5.2 Phase 2: Planning (Beginning IRB Process)

The CCE Framework lists concerns regarding informing, communicating, meeting children's values, matching activities, and avoiding failures [19, 46, 64, 76, 83, 84]. Focusing on teachers and other adult stakeholders, we emphasise concerns around **communication** during the development of activities suggesting co-design sessions with teachers to ensure workshops meet the schools' curricular needs and children's learning goals. This open communication helps *build a rapport with teachers and schools*, who could then possibly **champion** our research by inviting us to their schools. We can ask *How, in this project, can we better involve teachers?* We highlight **flexibility** as it pertains to the adults. Being flexible to children's needs is already in the CCE Framework but looking to the teachers' needs requires a different approach. *Are we able to adjust our plan if the class has to finish early or if the teacher needs to administer a test?* We also bring the concern of **activities** into this phase; activities may need to be adapted to fit the school and teachers' curriculum as well as the needs of the children. Participation and inclusion of children are the heart of the CCI research; one barrier to inclusion that should be highlighted is that of children's access to technical content and tools within the classroom environment. We ask *What technology is needed? What connectivity is needed?*

5.3 Phase 3: Pre-study (Just Before)

Although achieving meaningful and informed assent from children remains difficult, the CCE Framework offers helpful recommendations on consent and assent processes [15, 21, 58, 83, 84]. We expand on these by highlighting the need for **transparency** in consent/assent practices and deeper reflection on **dissent**. These two concerns suggest that we strive for more *child friendly assent mechanisms* and ensure children are given the *means and opportunities to assent and dissent.* It is important to ask *Can we design in dissent opportunities for children?* and to query if our team *knows how to recognise signs of a child wishing to dissent?* For adult stakeholders, we foreground the very complex concern about the way their **consent** practices operate. Here we ask *Is it appropriate for a school to gather consent on our behalf?* and to consider the impact on a child with a parent who has not signed the requisite forms.

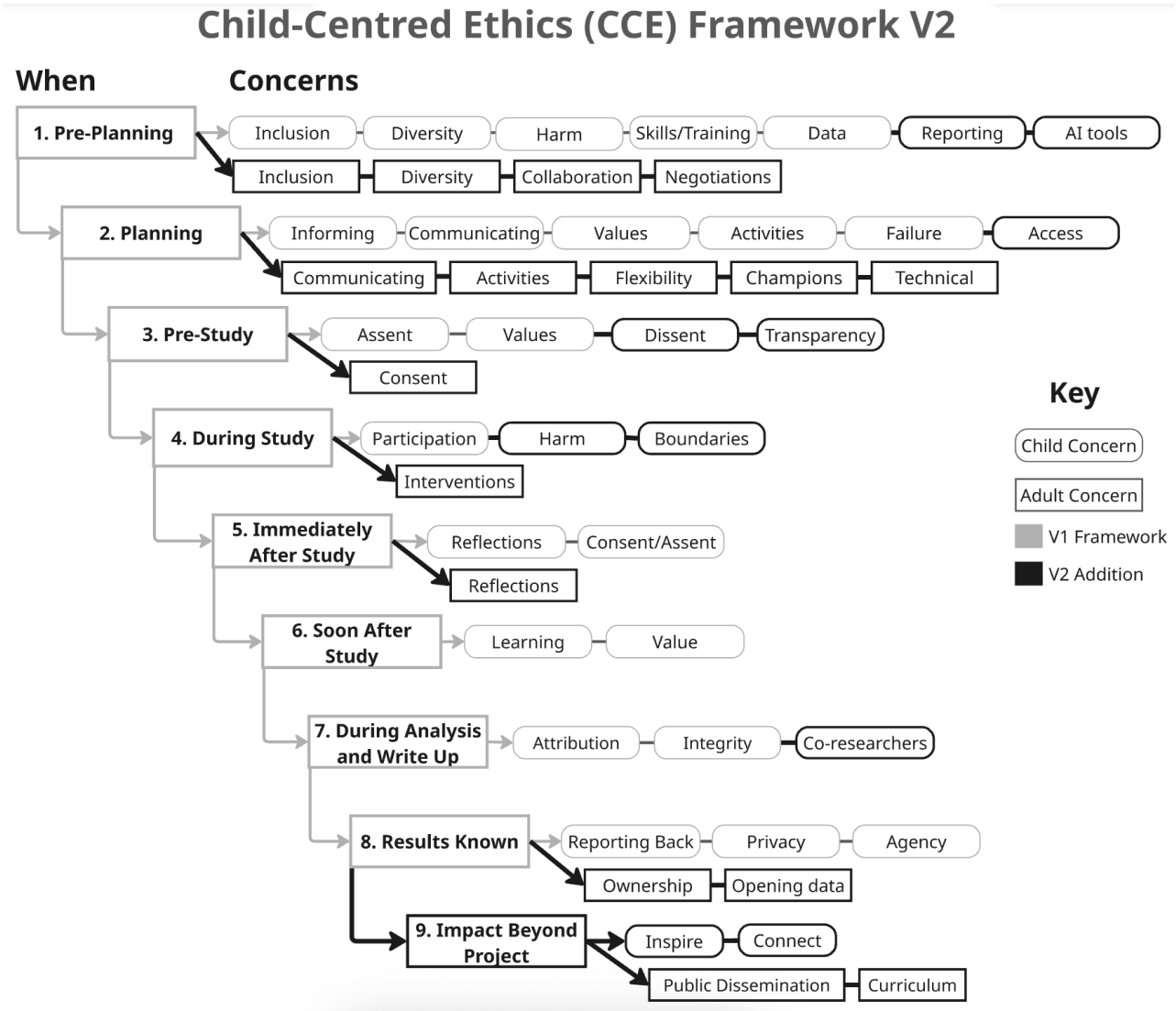

Figure 1: Visual Representation of Updated (V2) CCE Framework

5.4 Phase 4: During the Study

In our work, we reflected on how working with children and young people can be tricky and that researchers can find themselves in difficult and unexpected situations. Thus, we propose setting social and behavioural **boundaries**, which adult facilitators agree on and ensure there are appropriate and timely **interventions**. Some of these interventions might need to be negotiated during the pre-planning phase. We ask *Who and how do we intervene when participants push boundaries?* We also aim to encourage researchers to consider whether their activities and/or technologies could introduce **risks** or **harms** and create unintended opportunities for frivolous behaviour or leave participants overstimulated. We ask, *What activities might create situations where participants might become disruptive?* and *How do we ensure that other adult facilitators are aware when an intervention is needed?*

5.5 Phases 5 and 6: Immediately and Soon After the Study

As the CCE Framework already indicates, reflections immediately after the study are crucial to document and understand what went right or wrong, and how to do better next time [63, 67, 79]. We emphasize that this **reflection** is also a concern for the adult gatekeepers and propose that researchers collaborate with them to review project activities, documenting experiences, challenges, and successful practices for future reference asking– *How were the sessions and what lessons can be learned?*

5.6 Phase 7: During Analysis and Write-up

The CCE Framework aligns with the broader goal of maximizing participation [27], including the inclusion of children as **co-researchers**. While the framework advocates for children's involvement during pre-planning, it also encourages incorporating their skills and voices during the reporting and paper writing stage. We imagine a future relationship where the paper writing process is a dialogue between researchers and participants– *Can we include children in the analysis and writing up stage?*

5.7 Phase 8: When Results Are Known

While it is essential to consider children's agency and privacy when reporting results to them or in other venues, as noted in the CCE Framework [61, 76, 88]; we also urge considering what is reported to the different adult stakeholders. We draw attention to issues surrounding data **ownership** and how it is later used, especially concerning its **openness** and **accessibility**. These challenges cannot be addressed through a single policy or guideline, they are situational, negotiated, and often unresolved, requiring dialogues across multiple stakeholders, sometimes across countries. By foregrounding children's perspectives and rights within these negotiations, we must examine the infrastructures– academic, institutional, and technological –that shape what is possible, and imagine more ethical ways of sharing knowledge and credit in child-centred research. We ask *How can we preserve the privacy and rights of children with multiple agencies owning rights to our collected data?*

5.8 Phase 9: Impact Beyond the Project

We propose this phase as a new addition to the CCE Framework. Although we may aspire to achieve significant, transformative impacts, these are difficult to realise and even harder to control. As our project nears completion, our responsibility is to maximize its impact and ensure that children's participation extends beyond academic publications. In this phase, we raise four concerns, two focused on the impact we have on the children and youth that we work with; two more facing externally to our other stakeholders. We have a role to **inspire** the young people we work with to become inquisitive, critical, creative, constructive people– much of our STEM work has this as a central theme but in raising this concern into the framework we ask the question *What specific actions can we take to inspire the youngsters we have worked with to build on our findings and activities?* We also want to use our project results to **connect** with the participants; and to connect them with the wider public and with science in a more general sense. We ask, as our project closes– *How can we maintain connections with our participant groups?*

One activity that is often hoped for, but frequently overlooked, is **public dissemination**. Just as the CCE Framework emphasizes ensuring children are informed about the findings, the same principle should apply to the general public. We argue that public dissemination, given its ability to drive impact, deserves explicit acknowledgment as a key consideration in the framework. We need to ask *Who in the wider public may be interested in this project and how do we reach them?* With much of our work being based around schools and learning, we need to consider how our projects can be scaled– one way to do this is to be informed about different **curricula** and to share our work broadly. It is often a country-specific issue how to create lasting impact with our research. In the circularity of planning for and drawing out impact, we stress that– back in phase 1– researchers ponder the impact of their work, while asking *What research should I do?* considering the dynamics of inclusion and exclusion [33].

6 Implications for CCI Research

Guided and inspired by the CCE Framework [59], we critically reflected on our experiences in twelve CCI projects with children in Finland, the UK, India, Japan, and the USA. Our work expands the CCE Framework by adding new concerns in multiple existing phases, introducing adult stakeholders to the discourse and proposing a new phase; impact beyond the project, to consider the impacts of a project on children, teachers, schools, and even national level curriculums, months or years after it ends.

Our work underscores the value of reflection as an approach in studying the significance of micro and everyday ethics in CCI [23, 78, 83]; our analysis makes visible how ethical issues, decisions, and judgements are emerging in situ, entwined with everyday practices, without explicit focus on ethics and without clear cut instructions on how to deal with ethical challenges as they arise. Our reflection reaffirms the nature of the CCE Framework [59] as a living document that can benefit from further extension from a broad and varied range of perspectives. Hence, we welcome additional in situ observations from CCI researchers and practitioners working with children and dealing with everyday micro ethics in the wild.

Our second main contribution concerns the practical enhancements to the CCE Framework [59] through our everyday observations. We contribute particularly through shedding additional light on the significance of various adult stakeholder groups and on longer-term impacts in terms of ethics. Whilst the important role of adults in CCI has been already pointed out both in PD [17] and general CCI [14, 50, 62, 68, 89]; CCI researchers have seldom reported on their role concerning practical ethics. Additionally, whilst CCI research has shown interest in ensuring children have real-world impacts in PD projects [34, 36, 37, 63, 64, 68], our updated CCE Framework clarifies impact as something that should be intentional and planned.

Our findings on adult actors and longer-term impacts interlinks with literature on infrastructuring (see e.g., [7]). Inspired by that literature, we argue we extend the CCE Framework regarding its horizontal and temporal reach, identifying networks of actors and longer timespan involved in CCI ethics. So far, the broad horizontal and temporal reach of doing ethics, i.e., addressing ethics in infrastructuring, has not been properly addressed in CCI research and we argue that this is an import area for future exploration.

7 Conclusion

In this paper we have reflected on our own research experiences to surface insights and themes that we believe can be useful to others conducting similar work with children. We extended the initial CCE Framework [59] by adding adults as stakeholders, and a new phase on impact beyond the project, as well as identifying additional concerns and questions. Our reflective method has shown that many of the good practices highlighted in the literature and in

the initial CCE framework were clearly embedded in the projects considered, and, with a lengthy span of time, it is clear that some ethics practices have evolved and given us nuanced insights. In selecting research projects to analyse we chose a diverse range in terms of context, population, and period to allow for deep and complex understandings. We encourage others to adopt our method and practice to continually strive to conduct research with children and young people that is well planned, meaningful and safe.

We acknowledge the limitations of our work; we have explored challenges and concerns related to child-centred ethics in CCI using a repertoire of our own projects. The projects chosen, while short and long term and with diverse ages and locations, all roughly align with a European tradition of participation and necessarily reflect the ideologies of the authors. Our list included representative projects in traditional user research, in non-European venues and with different languages and cultures but clearly we could have sought a more diverse set of projects although space in a paper such as this would have prevented that for this style of venue. We also acknowledge that our work was shaped by the initial CCE Framework and choosing, for example, a difference lens may have underneath different insights.

The context of our work rapidly changes with, for example, the expansion of AI systems and the impact of global crises we are facing across the world. In response we aim to continue extending the CCE Framework especially by inviting researchers with more diversity, and those working in currently under-represented contexts. Our analysis already pointed out the significance of linguistic and cultural issues for CCI ethics and while many authors in HCI point to the need for translation and cultural adaptation of our practices and tools to diverse settings around the globe (see e.g., [71, 74, 80]), we want to highlight this in our future work. Our revisions to the framework will be published online at https://interact.oulu.fi/cce as a living document and we invite researchers and practitioners to comment and contribute to it.

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References

[1] Alissa N Antle, Yumiko Murai, Alexandra Kitson, Yves Candau, Zoe Minh-Tam Dao-Kroeker, and Azadeh Adibi. 2022. "There are a LOT of moral issues with biowearables"... Teaching Design Ethics through a Critical Making Biowearable Workshop. In *Proceedings of the 21st Annual ACM Interaction Design and Children Conference*. ACM, New York, NY, USA, 327–340. doi:10.1145/3501712.3529717

[2] Najme Babai, Eva Duvall, Netta Iivari, Marianne Kinnula, and Ole Sejer Iversen. 2026. Theatre of the Tech-Oppressed: Exploring algorithmic injustice through participatory performances. In *Participatory Design Conference*. Association for Computing Machinery, New York, NY, USA. doi:10.1145/3796624.3796649

[3] Najme Babai, Eva Durall Gazulla, Netta Iivari, and Marianne Kinnula. 2025. Navigating the Future of Data-Driven Systems: Children's perspectives on data and agency. In *Proceedings of the 24th Interaction Design and Children (IDC '25)*. Association for Computing Machinery, New York, NY, USA, 124–139. doi:10.1145/3713043.3728844

[4] Karla Badillo-Urquiola, Zachary Shea, Zainab Agha, Irina Lediaeva, and Pamela Wisniewski. 2021. Conducting Risky Research with Teens: Co-designing for the Ethical Treatment and Protection of Adolescents. *Proc. ACM Hum.-Comput. Interact.* 4, CSCW3, Article 231 (Jan. 2021), 46 pages. doi:10.1145/3432930

[5] Eric P.S. Baumer, Vera Khovanskaya, Mark Matthews, Lindsay Reynolds, Victoria Schwanda Sosik, and Geri Gay. 2014. Reviewing reflection: on the use of reflection in interactive system design. In *Proceedings of the 2014 Conference on Designing Interactive Systems* (Vancouver, BC, Canada) *(DIS '14)*. Association for Computing Machinery, New York, NY, USA, 93–102. doi:10.1145/2598510.2598598

[6] Jeanette L. Blomberg and Austin Henderson. 1990. Reflections on participatory design: lessons from the trillium experience. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (Seattle, Washington, USA) *(CHI '90)*. Association for Computing Machinery, New York, NY, USA, 353–360. doi:10.1145/97243.97307

[7] Susanne Bødker, Christian Dindler, and Ole Sejer Iversen. 2017. Tying knots: Participatory infrastructuring at work. *Computer Supported Cooperative Work (CSCW)* 26, 1 (2017), 245–273. doi:10.1007/s10606-017-9268-y

[8] Fatima A Boujarwah, Nazneen, Hwajung Hong, Gregory D Abowd, and Rosa I Arriaga. 2011. Towards a framework to situate assistive technology design in the context of culture. In *The proceedings of the 13th international ACM SIGACCESS conference on Computers and accessibility*. Association for Computing Machinery, New York, NY, USA, 19–26. doi:10.1145/2049536.2049542

[9] Virginia Braun and Victoria Clarke. 2012. *Thematic analysis*. American Psychological Association, Washington, DC. doi:10.1037/13620-004

[10] Martin Brynskov and Martin Ludvigsen. 2006. Mock games: a new genre of pervasive play. In *Proceedings of the 6th Conference on Designing Interactive Systems* (University Park, PA, USA) *(DIS '06)*. Association for Computing Machinery, New York, NY, USA, 169–178. doi:10.1145/1142405.1142433

[11] Pia Christensen and Alan Prout. 2002. Working with ethical symmetry in social research with children. *Childhood* 9, 4 (2002), 477–497. doi:10.1177/0907568202090040

[12] Gail Collyer-Hoar and Elisa Rubegni. 2025. "Won't somebody please (actually) think of the children?" AI Ethics for Children: A Scoping Review. *ACM J. Responsib. Comput.* 2, 2, Article 10 (Aug. 2025), 37 pages. doi:10.1145/3745031

[13] Aurora Constantin, Jessica Korte, Judith Good, Gavin Sim, Janet Read, Jerry Alan Fails, and Eva Eriksson. 2022. A Distributed Participatory Design Research Protocol for Co-designing with Children. In *Proceedings of the 21st Annual ACM Interaction Design and Children Conference* (Braga, Portugal) *(IDC '22)*. Association for Computing Machinery, New York, NY, USA, 510–516. doi:10.1145/3501712.3535286

[14] Bronwyn J. Cumbo, Eva Eriksson, and Ole Sejer Iversen. 2020. The "Least-Adult" Role in Participatory Design with Children. In *Proceedings of the 31st Australian Conference on Human-Computer-Interaction* (Fremantle, WA, Australia) *(OzCHI '19)*. Association for Computing Machinery, New York, NY, USA, 73–84. doi:10.1145/3369457.3369464

[15] Daniella DiPaola, Blakeley H. Payne, and Cynthia Breazeal. 2020. Decoding design agendas: an ethical design activity for middle school students. In *Proceedings of the Interaction Design and Children Conference* (London, United Kingdom) *(IDC '20)*. Association for Computing Machinery, New York, NY, USA, 1–10. doi:10.1145/3392063.3394396

[16] Paul Dourish, Janet Finlay, Phoebe Sengers, and Peter Wright. 2004. Reflective HCI: towards a critical technical practice. In *CHI '04 Extended Abstracts on Human Factors in Computing Systems* (Vienna, Austria) *(CHI EA '04)*. Association for Computing Machinery, New York, NY, USA, 1727–1728. doi:10.1145/985921.986203

[17] Allison Druin. 2002. The role of children in the design of new technology. *Behaviour and information technology* 21, 1 (2002), 1–25. doi:10.1080/01449290110108659

[18] Eva Durall Gazulla, Mairéad Hurley, Netta Iivari, Marianne Kinnula, Najme Babai, and Yusra Niaz. 2025. *Youth, Imagination, and the Postdigital: Reflections from Participatory Speculative Design Activities*. Springer Nature Switzerland, 287–307. doi:10.1007/978-3-032-01539-6_15

[19] Lizbeth Escobedo, Franceli L. Cibrian, and Monica Tentori. 2023. Ethics without IRB, is that possible? The case study of participatory sessions with ASD Children in Mexico. In *Adjunct Proceedings of the 2023 ACM International Joint Conference on Pervasive and Ubiquitous Computing & the 2023 ACM International Symposium on Wearable Computing* (Cancun, Quintana Roo, Mexico) *(UbiComp/ISWC*

'23 Adjunct). Association for Computing Machinery, New York, NY, USA, 407–410. doi:10.1145/3594739.3610729

[20] Daniel Fitton, Beth T. Bell, Linda Little, Matthew Horton, Janet C. Read, Michelle Rouse, and Nicola Toth. 2016. Working with Teenagers in HCI Research: A Reflection on Techniques Used in the Taking on the Teenagers Project. In *Perspectives on HCI Research with Teenagers*, Linda Little, Daniel Fitton, Beth T. Bell, and Nicola Toth (Eds.). Springer International Publishing, Cham, 237–267. doi:10.1007/978-3-319-33450-9_10

[21] Christopher Frauenberger, Judith Good, Wendy Keay-Bright, and Helen Pain. 2012. Interpreting input from children: a designerly approach. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (Austin, Texas, USA) *(CHI '12)*. Association for Computing Machinery, New York, NY, USA, 2377–2386. doi:10.1145/2207676.2208399

[22] Christopher Frauenberger, Marjo Rauhala, and Geraldine Fitzpatrick. 2017. In-action ethics. *Interacting with computers* 29, 2 (2017), 220–236. doi:10.1093/iwc/iww024

[23] Eva Durall Gazulla, Noora Hirvonen, Sumita Sharma, Heidi Hartikainen, Ville Jylhä, Netta Iivari, Marianne Kinnula, and Aizhan Baizhanova. 2025. Youth perspectives on technology ethics: analysis of teens' ethical reflections on AI in learning activities. *Behaviour & Information Technology* 44, 5 (2025), 888–911. doi:10.1080/0144929X.2024.2350666

[24] Eva Durall Gazulla, Netta Iivari, Najme Babai, Marianne Kinnula, and Noah Teglvang Sejer Iversen. 2025. Envisioning Social Justice through Future Headlines: A Framework for Analyzing Youth's Moral and Normative Reasoning. In *Proceedings of the 19th International Conference of the Learning Sciences - ICLS 2025 (ICLS 2025)*. International Society of the Learning Sciences, 1329–1333. doi:10.22318/icls2025.931997

[25] Tuure Haarjärvi, Behnaz Norouzi, Marianne Kinnula, Leena Ventä-Olkkonen, Heidi Hartikainen, and Sumita Sharma. 2026. Youth AI designs meet eternal values: responsible digital technology design and innovation education. *Behaviour & Information Technology* (Jan. 2026), 1–23. doi:10.1080/0144929x.2026.2615036

[26] Roger A Hart. 1992. *Children's participation: From tokenism to citizenship*. Technical Report. UNICEF International Child Development Centre.

[27] Roger A Hart. 2013. *Children's participation: The theory and practice of involving young citizens in community development and environmental care*. Routledge, London. doi:10.4324/9781315070728

[28] Heidi Hartikainen, Yusra Niaz, Eva Durall Gazulla, and Marianne Kinnula. 2024. Critical Change Laboratories towards justice oriented transformations. In ACM SIGCHI Conference 2024 Workshop: Transformative Technologies for Children: Going beyond 'Good'..

[29] Juan Pablo Hourcade, Meryl Alper, Elizabeth Bonsignore, Tamara Clegg, Jerry Alan Fails, Greg Walsh, Svetlana Yarosh, and Jason Yip. 2023. Participatory Approaches to the Ethics of Emerging Technologies for Children. In *Proceedings of the 22nd Annual ACM Interaction Design and Children Conference* (Chicago, IL, USA) *(IDC '23)*. Association for Computing Machinery, New York, NY, USA, 795–797. doi:10.1145/3585088.3589926

[30] Juan Pablo Hourcade, Summer Schmuecker, Delaney Norris, and Flannery Hope Currin. 2024. Understanding Adult Stakeholder Perspectives on the Ethics of Extended Reality Technologies with a Focus on Young Children and Children in Rural Areas. In *Proceedings of the 23rd Annual ACM Interaction Design and Children Conference* (Delft, Netherlands) *(IDC '24)*. Association for Computing Machinery, New York, NY, USA, 455–468. doi:10.1145/3628516.3655811

[31] Casey Lee Hunt, Kaiwen Sun, Zahra Dhuliawala, Fumi Tsukiyama, Iva Matkovic, Zachary Schwemler, Anastasia Wolf, Zihao Zhang, Allison Druin, Amanda Huynh, Daniel Leithinger, and Jason Yip. 2023. Designing Together, Miles Apart: A Longitudinal Tabletop Telepresence Adventure in Online Co-Design with Children. In *Proceedings of the 22nd Annual ACM Interaction Design and Children Conference* (Chicago, IL, USA) *(IDC '23)*. Association for Computing Machinery, New York, NY, USA, 52–67. doi:10.1145/3585088.3589359

[32] Netta Iivari and Marianne Kinnula. 2018. Empowering children through design and making: towards protagonist role adoption. In *Proceedings of the 15th Participatory Design Conference: Full Papers - Volume 1* (Hasselt and Genk, Belgium) *(PDC '18)*. Association for Computing Machinery, New York, NY, USA, Article 16, 12 pages. doi:10.1145/3210586.3210600

[33] Netta Iivari, Marianne Kinnula, Tonja Molin-Juustila, and Leena Kuure. 2018. Exclusions in social inclusion projects: Struggles in involving children in digital technology development. *Information Systems Journal* 28, 6 (2018), 1020–1048. doi:10.1111/isj.12180

[34] Netta Iivari, Leena Ventä-Olkkonen, Heidi Hartikainen, Sumita Sharma, Essi Lehto, Jenni Holappa, and Tonja Molin-Juustila. 2023. Computational empowerment of children: Design research on empowering and impactful designs by children. *International Journal of Child-Computer Interaction* 37 (2023), 100600. doi:10.1016/j.ijcci.2023.100600

[35] Netta Iivari, Leena Ventä-Olkkonen, Essi Lehto, Jenni Holappa, and Heidi Hartikainen. 2024. How to combine criticality with reflection? Scaffolding children's critical reflection in the case of anti-bullying interventions. In *Proceedings of the 13th Nordic Conference on Human-Computer Interaction* (Uppsala, Sweden) *(NordiCHI '24)*. Association for Computing Machinery, New York, NY, USA, Article 21, 13 pages. doi:10.1145/3679318.3685354

[36] Netta Iivari, Leena Ventä-Olkkonen, Sumita Sharma, Heidi Hartikainen, Jenni Holappa, and Essi Lehto. 2024. Fostering children?s critical literacy in computing education. In *Proceedings of the 2024 Symposium on Learning, Design and Technology* (Delft, Netherlands) *(LDT '24)*. Association for Computing Machinery, New York, NY, USA, 57–65. doi:10.1145/3663433.3663462

[37] Ole Sejer Iversen and Christian Dindler. 2014. Sustaining participatory design initiatives. *CoDesign* 10, 3-4 (2014), 153–170. doi:10.1080/15710882.2014.963124

[38] Ole Sejer Iversen, Kim Halskov, and Tuck W Leong. 2012. Values-led participatory design. *CoDesign* 8, 2-3 (2012), 87–103. doi:10.1080/15710882.2012.672575

[39] Ole Sejer Iversen, Rachel Charlotte Smith, and Christian Dindler. 2017. Child as Protagonist: Expanding the Role of Children in Participatory Design. In *Proceedings of the 2017 Conference on Interaction Design and Children* (Stanford, California, USA) *(IDC '17)*. Association for Computing Machinery, New York, NY, USA, 27–37. doi:10.1145/3078072.3079725

[40] Qiao Jin, Saba Kawas, Stuti Arora, Ye Yuan, and Svetlana Yarosh. 2024. Is Your Family Ready for VR? Ethical Concerns and Considerations in Children's VR Usage. In *Proceedings of the 23rd Annual ACM Interaction Design and Children Conference* (Delft, Netherlands) *(IDC '24)*. Association for Computing Machinery, New York, NY, USA, 436–454. doi:10.1145/3628516.3655804

[41] Saba Kawas, Ye Yuan, Akeiylah DeWitt, Qiao Jin, Susanne Kirchner, Abigail Bilger, Ethan Grantham, Julie A Kientz, Andrea Tartaro, and Svetlana Yarosh. 2020. Another decade of IDC research: examining and reflecting on values and ethics. In *Proceedings of the Interaction Design and Children Conference* (London, United Kingdom) *(IDC '20)*. Association for Computing Machinery, New York, NY, USA, 205–215. doi:10.1145/3392063.3394436

[42] S Rebecca Kelly, Emanuela Mazzone, Matthew Horton, and Janet C Read. 2006. Bluebells: a design method for child-centred product development. In *Proceedings of the 4th Nordic Conference on Human-Computer Interaction: Changing Roles* (Oslo, Norway) *(NordiCHI '06)*. Association for Computing Machinery, New York, NY, USA, 361–368. doi:10.1145/1182475.1182513

[43] Marianne Kinnula, Eva Durall Gazulla, Noora Hirvonen, Jonna Malmberg, and Lotta Haukipuro. 2024. Nurturing systems thinking among young people by developing business ideas on sustainable AI. *International Journal of Child-Computer Interaction* 40 (June 2024), 100656. doi:10.1016/j.ijcci.2024.100656

[44] Marianne Kinnula, Eva Durall Gazulla, and Netta Iivari. 2025. Design Citizenship: Reflections on the Value of Participatory Design in Cultivating Democratic Cultures in Design Projects with Children. In *Adjunct Proceedings of the Sixth Decennial Aarhus Conference: Computing X Crisis (AAR Adjunct '25)*. Association for Computing Machinery, New York, NY, USA, Article 17, 5 pages. doi:10.1145/3737609.3747120

[45] Priya Kumar, Jessica Vitak, Marshini Chetty, Tamara L. Clegg, Jonathan Yang, Brenna McNally, and Elizabeth Bonsignore. 2018. Co-designing online privacy-related games and stories with children. In *Proceedings of the 17th ACM Conference on Interaction Design and Children* (Trondheim, Norway) *(IDC '18)*. Association for Computing Machinery, New York, NY, USA, 67–79. doi:10.1145/3202185.3202735

[46] Susanne Lindberg, Michel Thomsen, and Maria Åkesson. 2014. Ethics in health promoting PD: designing digital peer support with children cured from cancer. In *Proceedings of the 13th Participatory Design Conference: Research Papers - Volume 1* (Windhoek, Namibia) *(PDC '14)*. Association for Computing Machinery, New York, NY, USA, 91–100. doi:10.1145/2661435.2661449

[47] Emanuela Mazzone, Janet C Read, and Russell Beale. 2008. Design with and for disaffected teenagers. In *Proceedings of the 5th Nordic Conference on Human-Computer Interaction: Building Bridges* (Lund, Sweden) *(NordiCHI '08)*. Association for Computing Machinery, New York, NY, USA, 290–297. doi:10.1145/1463160.1463192

[48] Nicola McMeekin, Olivia Wu, Evi Germeni, and Andrew Briggs. 2020. How methodological frameworks are being developed: evidence from a scoping review. *BMC medical research methodology* 20, 1 (2020), 173. doi:10.1186/s12874-020-01061-4

[49] Brenna McNally, Mona Leigh Guha, Matthew Louis Mauriello, and Allison Druin. 2016. Children's Perspectives on Ethical Issues Surrounding Their Past Involvement on a Participatory Design Team. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems* (San Jose, California, USA) *(CHI '16)*. Association for Computing Machinery, New York, NY, USA, 3595–3606. doi:10.1145/2858036.2858338

[50] Tonja Molin-Juustila, Marianne Kinnula, Netta Iivari, Leena Kuure, and Eija Halkola. 2015. Multiple voices in ICT design with children–a nexus analytical enquiry. *Behaviour & Information Technology* 34, 11 (2015), 1079–1091. doi:10.1080/0144929X.2014.1003327

[51] Virginia Morrow and Martin Richards. 1996. The ethics of social research with children: An overview 1. *Children & society* 10, 2 (1996), 90–105. doi:10.1111/j.1099-0860.1996.tb00461.x

[52] Yusra Niaz, Eva Durall Gazulla, and Marianne Kinnula. 2025. A Relational Turn for Child-Computer Interaction Research? A Scoping Review. *International Journal of Child-Computer Interaction* (2025). doi:10.1016/j.ijcci.2026.100803

[53] Giovanna Nunes Vilaza, Kevin Doherty, Darragh McCashin, David Coyle, Jakob Bardram, and Marguerite Barry. 2022. A Scoping Review of Ethics Across SIGCHI. In *Proceedings of the 2022 ACM Designing Interactive Systems Conference* (Virtual Event, Australia) *(DIS '22)*. Association for Computing Machinery, New York, NY, USA, 137–154. doi:10.1145/3532106.3533511

[54] Sean Peacock, Robert Anderson, and Clara Crivellaro. 2018. Streets for People: Engaging Children in Placemaking Through a Socio-technical Process. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems* (Montreal QC, Canada) *(CHI '18)*. Association for Computing Machinery, New York, NY, USA, 1–14. doi:10.1145/3173574.3173901

[55] Johanna Pentikainen and Outi Kallionpää. 2024. Systematic Review of Research on Learning Writing Skills Using Gamification. *Seminar.net* 20, 2 (Dec. 2024). doi:10.7577/seminar.5712

[56] David Purington. 2010. One Laptop per Child: a misdirection of humanitarian effort. *SIGCAS Comput. Soc.* 40, 1 (March 2010), 28–33. doi:10.1145/1750888.1750892

[57] Janet Read, Dan Fitton, and Matthew Horton. 2021. Capturing and Considering Idea Development in School Pupils' Design Activities. In *Proceedings of the 20th Annual ACM Interaction Design and Children Conference* (Athens, Greece) *(IDC '21)*. Association for Computing Machinery, New York, NY, USA, 147–152. doi:10.1145/3459990.3460722

[58] Janet Read, Matthew Horton, Dan Fitton, John King, Gavin Sim, Julie Allen, Ioannis Doumanis, Tony Graham, Dongjie Xu, Michelle Tierney, Mark Lochrie, and Scott MacKenzie. 2024. Inclusive Child Engagement in HCI: Exploring Ocean Health with Schoolchildren. In *Proceedings of the 23rd Annual ACM Interaction Design and Children Conference* (Delft, Netherlands) *(IDC '24)*. Association for Computing Machinery, New York, NY, USA, 83–92. doi:10.1145/3628516.3655750

[59] Janet Read, Matthew Horton, Daniel Fitton, and Gavin Sim. 2025. Child Centred Ethics (CCE): A Practical Framework for Enhanced Child Participation in HCI. In *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25)*. Association for Computing Machinery, New York, NY, USA, Article 404, 16 pages. doi:10.1145/3706598.3714248

[60] Janet Read, Matthew Horton, Dan Fitton, Gavin Sim, Rhona Anne Dick, Emanuela Mazzone, and Rachel Forbes. 2023. Small CCI – Exploring App Evaluation with Preschoolers. In *Proceedings of the 22nd Annual ACM Interaction Design and Children Conference* (Chicago, IL, USA) *(IDC '23)*. Association for Computing Machinery, New York, NY, USA, 94–99. doi:10.1145/3585088.3589362

[61] Janet Read, Gavin Sim, Matthew Horton, and Dan Fitton. 2022. Reporting Back in HCI Work with Children. In *Proceedings of the 21st Annual ACM Interaction Design and Children Conference* (Braga, Portugal) *(IDC '22)*. Association for Computing Machinery, New York, NY, USA, 517–522. doi:10.1145/3501712.3535279

[62] Janet C. Read and Mathilde M. Bekker. 2011. The nature of child computer interaction. In *Proceedings of the 25th BCS Conference on Human-Computer Interaction* (Newcastle-upon-Tyne, United Kingdom) *(BCS-HCI '11)*. BCS Learning & Development Ltd., Swindon, GBR, 163–170. doi:10.5555/2305316.2305348

[63] Janet C. Read, Daniel Fitton, and Matthew Horton. 2014. Giving ideas an equal chance: inclusion and representation in participatory design with children. In *Proceedings of the 2014 Conference on Interaction Design and Children* (Aarhus, Denmark) *(IDC '14)*. Association for Computing Machinery, New York, NY, USA, 105–114. doi:10.1145/2593968.2593986

[64] Janet C. Read, Matthew Horton, Gavin Sim, Peggy Gregory, Daniel Fitton, and Brendan Cassidy. 2013. CHECk: a tool to inform and encourage ethical practice in participatory design with children. In *CHI '13 Extended Abstracts on Human Factors in Computing Systems* (Paris, France) *(CHI EA '13)*. Association for Computing Machinery, New York, NY, USA, 187–192. doi:10.1145/2468356.2468391

[65] Jennifer A. Rode. 2009. Digital parenting: designing children's safety. In *Proceedings of the 23rd British HCI Group Annual Conference on People and Computers: Celebrating People and Technology* (Cambridge, United Kingdom) *(BCS-HCI '09)*. BCS Learning & Development Ltd., Swindon, GBR, 244–251. doi:10.5555/1671011.1671041

[66] Lundefinedvija Dana Rukmane, Elisa Rubegni, and Janet Read. 2022. Exploring Failures in Child-Computer Interaction.: Shifting the paradigm from "failures need to be hidden" to "failure is a learning opportunity".. In *Proceedings of the 21st Annual ACM Interaction Design and Children Conference* (Braga, Portugal) *(IDC '22)*. Association for Computing Machinery, New York, NY, USA, 492–497. doi:10.1145/3501712.3535299

[67] Lundefinedvija Dana Rukmane, Elisa Rubegni, and Janet Read. 2022. Exploring Failures in Child-Computer Interaction.: Shifting the paradigm from "failures need to be hidden" to "failure is a learning opportunity".. In *Proceedings of the 21st Annual ACM Interaction Design and Children Conference* (Braga, Portugal) *(IDC '22)*. Association for Computing Machinery, New York, NY, USA, 492–497. doi:10.1145/3501712.3535299

[68] Selina Schepers, Jessica Schoffelen, Bieke Zaman, and Katrien Dreessen. 2022. Going beyond short-term,'reduced'PD: Towards an encompassing typology for children's participation in infrastructuring processes. *International Journal of Child-Computer Interaction* 33 (2022), 100484. doi:10.1016/j.ijcci.2022.100484

[69] Priyanka Sebastian, Sumita Sharma, Netta Iivari, Marianne Kinnula, Charu Monga, and Aakash Gautam. 2025. "I'd love a microchip in my brain because there would be no homework." – School Children Reimagine the Future of Education with Emerging Technologies. In *Proceedings of the 28th International Academic Mindtrek Conference (Mindtrek '25)*. Association for Computing Machinery, New York, NY, USA, 117–129. doi:10.1145/3757980.3757997

[70] Priyanka Sebastian, Sumita Sharma, Netta Iivari, Marianne Kinnula, Charu Monga, Deepanshu Verma, and Muhammad Shahroz Abbas. 2024. Emerging Technologies in Global South Classrooms: Teachers Imagining Future of Education. In *Proceedings of the Participatory Design Conference 2024: Full Papers - Volume 1* (Sibu, Malaysia) *(PDC '24)*. Association for Computing Machinery, New York, NY, USA, 234–247. doi:10.1145/3666094.3666109

[71] Sumita Sharma, Krishnaveni Achary, Marianne Kinnula, Behnaz Norouzi, Henrietta Kinnula, Netta Iivari, Leena Ventä-Olkkonen, and Jenni Holappa. 2022. To Empower or Provoke? Exploring approaches for participatory design at schools for neurodiverse individuals in India. *International Journal of Child-Computer Interaction* 34 (2022), 100521. doi:10.1016/j.ijcci.2022.100521

[72] Sumita Sharma, Heidi Hartikainen, Leena Ventä-Olkkonen, Grace Eden, Netta Iivari, Essi Kinnunen, Jenni Holappa, Marianne Kinnula, Tonja Molin-Juustila, Jussi Okkonen, et al. 2022. In pursuit of inclusive and diverse digital futures: exploring the potential of design fiction in education of children. *Interaction Design and Architecture (s)* 51 (2022), 219–248.

[73] Sumita Sharma, Noura Howell, Leena Ventä-Olkkonen, Netta Iivari, Grace Eden, Heidi Hartikainen, Marianne Kinnula, Eva Durall, Michael Nitsche, Jussi Okkonen, Supratim Pait, Elisa Rubegni, Wouter Sluis-Thiescheffer, Lonneke van der Velden, and Uttishta Sreerama Varanasi. 2024. Promoting Criticality with Design Futuring with Young Children. In *Proceedings of the 13th Nordic Conference on Human-Computer Interaction* (Uppsala, Sweden) *(NordiCHI '24)*. Association for Computing Machinery, New York, NY, USA, Article 2, 15 pages. doi:10.1145/3679318.3685335

[74] Sumita Sharma, Pauli Klemettilä, and Junko Tanaka. 2025. A robot teacher "is very good for learning, but not for human relationships": Japanese Children's Critical Perspectives Towards Ethical AI Futures. In *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25)*. Association for Computing Machinery, New York, NY, USA, Article 215, 20 pages. doi:10.1145/3706598.3713204

[75] Sumita Sharma, Behnaz Norouzi, Leena Ventä-Olkkonen, Tommi Kinnula, Marianne Nevala, Charu Monga, and Tuure Haarjärvi. 2025. Speculative Filmmaking with Children: Envisioning the Future of Humans, Machines, and Nature. *Proceedings of the International Association of Societies of Design Research Congress (IASDR)* (2025).

[76] Antonia Clasina Södergren. 2024. Ensuring Inclusivity and Well-being of Children Call for Accuracy in Ethical (Design) Practices: Making the Interpersonal Aspects of Data Collection Explicit and Value-centred by Scaffolding the Quality Criterion of 'Sincerity' in Human-involved Research. In *Proceedings of the 23rd Annual ACM Interaction Design and Children Conference* (Delft, Netherlands) *(IDC '24)*. Association for Computing Machinery, New York, NY, USA, 856–868. doi:10.1145/3628516.3659407

[77] Katta Spiel. 2020. SIGCHI Outstanding Dissertation Award: Evaluating Experiences of Autistic Children with Technologies in Co-Design. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems* (Honolulu, HI, USA) *(CHI EA '20)*. Association for Computing Machinery, New York, NY, USA, 1–4. doi:10.1145/3334480.3386151

[78] Katta Spiel, Emeline Brulé, Christopher Frauenberger, Gilles Bailley, and Geraldine Fitzpatrick. 2020. In the details: the micro-ethics of negotiations and in-situ judgements in participatory design with marginalised children. *CoDesign* 16, 1 (2020), 45–65. doi:10.1080/15710882.2020.1722174

[79] Katta Spiel, Emeline Brulé, Christopher Frauenberger, Gilles Bailly, and Geraldine Fitzpatrick. 2018. Micro-ethics for participatory design with marginalised children. In *Proceedings of the 15th Participatory Design Conference: Full Papers - Volume 1* (Hasselt and Genk, Belgium) *(PDC '18)*. Association for Computing Machinery, New York, NY, USA, Article 17, 12 pages. doi:10.1145/3210586.3210603

[80] Christian Sturm, Alice Oh, Sebastian Linxen, Jose Abdelnour Nocera, Susan Dray, and Katharina Reinecke. 2015. How WEIRD is HCI? Extending HCI Principles to other Countries and Cultures. In *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems* (Seoul, Republic of Korea) *(CHI EA '15)*. Association for Computing Machinery, New York, NY, USA, 2425–2428. doi:10.1145/2702613.2702656

[81] Lauren Thompson, Sydney Charitos, Kimberley Beaumont, Amberly Brigden, and Jon Bird. 2024. Exploring Young Children's Views on Sharing Personal Health Data Between Ages 7-14. In *Proceedings of the 23rd Annual ACM Interaction Design and Children Conference* (Delft, Netherlands) *(IDC '24)*. Association for Computing Machinery, New York, NY, USA, 800–805. doi:10.1145/3628516.3659397

[82] Ruut Tikkanen and Netta Iivari. 2025. Towards Playful Computational Empowerment - Teenagers Designing Their Learning Environment. In *Proceedings of the 18th International Conference on Computer-Supported Collaborative Learning - CSCL 2025 (CSCL 2025)*. International Society of the Learning Sciences, 593–595. doi:10.22318/cscl2025.962918

[83] Maarten Van Mechelen, Gökçe Elif Baykal, Christian Dindler, Eva Eriksson, and Ole Sejer Iversen. 2020. 18 Years of ethics in child-computer interaction research: a

systematic literature review. In *Proceedings of the Interaction Design and Children Conference* (London, United Kingdom) *(IDC '20)*. Association for Computing Machinery, New York, NY, USA, 161–183. doi:10.1145/3392063.3394407

[84] Maarten Van Mechelen, Gavin Sim, Bieke Zaman, Peggy Gregory, Karin Slegers, and Matthew Horton. 2014. Applying the CHECk tool to participatory design sessions with children. In *Proceedings of the 2014 Conference on Interaction Design and Children* (Aarhus, Denmark) *(IDC '14)*. Association for Computing Machinery, New York, NY, USA, 253–256. doi:10.1145/2593968.2610465

[85] Asimina Vasalou, Seray Ibrahim, Michael Clarke, and Yvonne Griffiths. 2021. On power and participation: Reflections from design with developmentally diverse children. *International journal of child-computer interaction* 27 (2021), 100241. doi:10.1016/j.ijcci.2020.100241

[86] Leena Ventä-Olkkonen, Netta Iivari, Sumita Sharma, Nina Juustila-Cevirel, Tonja Molin-Juustila, Essi Kinnunen, Jenni Holappa, and Heidi Hartikainen. 2022. All the world is our stage: empowering children to tackle bullying through theatre of the oppressed in critical design and making. In *Nordic Human-Computer Interaction Conference*. ACM, New York, NY, USA, 1–15.

[87] Ge Wang, Jun Zhao, Max Van Kleek, and Nigel Shadbolt. 2022. Informing age-appropriate ai: Examining principles and practices of ai for children. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*. Association for Computing Machinery, New York, NY, USA, 1–29. doi:10.1145/3491102.3502057

[88] Pontus Wärnestål, Petra Svedberg, and Jens Nygren. 2014. Co-constructing child personas for health-promoting services with vulnerable children. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (Toronto, Ontario, Canada) *(CHI '14)*. Association for Computing Machinery, New York, NY, USA, 3767–3776. doi:10.1145/2556288.2557115

[89] Jason C. Yip, Kiley Sobel, Caroline Pitt, Kung Jin Lee, Sijin Chen, Kari Nasu, and Laura R. Pina. 2017. Examining Adult-Child Interactions in Intergenerational Participatory Design. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems* (Denver, Colorado, USA) *(CHI '17)*. Association for Computing Machinery, New York, NY, USA, 5742–5754. doi:10.1145/3025453.3025787

[90] Bieke Zaman, Emilie Bossens, and Priscilla Van Even. 2024. Bridging the Gaps: Participatory Science Communication and Dissemination With and for Children. In *Proceedings of the 23rd Annual ACM Interaction Design and Children Conference* (Delft, Netherlands) *(IDC '24)*. Association for Computing Machinery, New York, NY, USA, 142–156. doi:10.1145/3628516.3655816

[91] John Zimmerman, Jodi Forlizzi, and Shelley Evenson. 2007. Research through design as a method for interaction design research in HCI. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (San Jose, California, USA) *(CHI '07)*. Association for Computing Machinery, New York, NY, USA, 493–502. doi:10.1145/1240624.1240704

A Previous CCE Framework

Table 3 shows the CCE Framework from Read et al. [59].

Table 3: CCE Framework

When	Refs.	Concerns	Questions to Ask	Tools (T) and Ideas (I)
Pre-Planning (before IRB)	[13, 76]	The value of **Inclusion** of children.	Is it appropriate to include children in this work?	Group meeting (I)
	[65, 81]	**Diversity** of children in HCI research.	Can a broader selection of children be included? Can Public engagement be used?	Collaborations (I) Choices outside IRB (I)
	[10, 56]	Technology and **harm** / appropriateness.	Is it appropriate at this time and with these children?	Adult review (I)
	[77]	Skills and training of participating adults.	Do the intended adults have the requisite skills?	Skill audit (I), Courses (I)
	[4, 58, 60]	Minimal and appropriate **data** collection.	How much personal data is needed? Can children be included in the design of data collection?	Analysis review (I) Pilot (I)
Planning (beginning IRB process)	[61]	**Informing** children of outcomes.	How and when will we report back to children?	Reporting back checklist (T)
	[19, 64, 84]	**Communicating** research.	Will children understand what participation involves? Will children understand what is expected of them?	CHECk toolkit (T) Check with teachers (I)
	[83]	Meeting **children's values**.	Can children's values be sought and included?	Visit children (I)
	[76]	Matching **activities** to abilities.	Can we discern the different needs of children and design activities for them?	Talk to adults (I)
	[46]	Avoiding **failure**.	What flexibility is there in the activity design?	Back up plan (I)
Pre-study (just before)	[21, 58, 83]	**Informed assent**.	Can we teach about research data? Can children understand what they are participating in and why? Will they understand the technology or technical language?	Games (I) Child friendly info packs (I) Check with adults (I)
	[15, 84]	Capturing **children's values**.	What are the children's values in relation to this research?	Ethical Canvas (T)
During Study	[41, 49, 58, 79, 83]	**Participation** and Inclusion.	Can children participate even without adult consent? How are children aware participation is optional?	Design activities in for such situations (I) Active dissent (I)
Immediately After Study	[79]	Critical **Reflection** to Learn.	Did anything go wrong?	Maintain event log sheets (I), Debrief (I)
	[79]	Validity of **consent / assent** given earlier.	Do children still consent after participating?	Assent form (I)
Soon After Study	[67]	Learning lessons and documenting failures.	Was the study a success?	Critical reflection (I)
	[63]	**Value** to children.	Did all children contribute effectively?	TRAck (T)
During analysis and write up	[21, 49, 57]	**Attribution** of children's contributions.	Can paper show a clear line from child contribution to results? How can children associate with the paper?	Ideas (T), Video analysis process (I) Consider naming school or similar (I)
When results are known	[83]	**Integrity** of publication.	What ethical aspects should be reported?	Use IDC statement (I)
	[61, 76, 88]	**Reporting back.**	What can we tell the children?	Reporting Back Checklist (T), Video (T)
	[41]	**Privacy.**	Is there any residual data needing removing?	Delete (I)
	[54, 90]	Enhanced **Agency**.	Can children help disseminate?	Town Hall (I), child designed dissemination (I)