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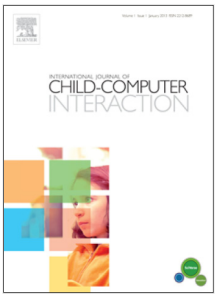

Ethical dilemmas experienced by students in Child-Computer Interaction—A case study

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Ethical Dilemmas Experienced by Students in Child-Computer Interaction- A Case Study

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Abstract

Although there is an increased focus on the ethical responsibilities of designers when designing children's technologies, there are few academic examples on what it entails to teach this to design students. We have therefore set out to explore the most common ethical dilemmas experienced by design students in child-computer interaction (CCI) when interacting with children in the field. This case study article reports on an analysis of the situated ethical experiences from 45 international master students in interaction design during their projects to design children's technologies. The main research question for this paper is what common ethical dilemmas students in CCI experience when involving children in their design process. The dilemmas we present stem from the written home exams of the students in our course and have been clustered under three temporally relevant themes: Selection of participants, Informed Consent, and Working with children. These situational ethical dilemmas can be used by teachers in the field to complement the formal ethical guidelines provided to students and have a discussion on how to deal with them in their own practice.

Keywords: Child-Computer Interaction, Ethics, HCI, Teaching, Students, CCI.

1. Introduction

As human-computer interaction (HCI) researchers are designing and evaluating technologies in increasingly sensitive and challenging settings, it has become crucial to consider and plan for ethical issues when conducting research involving people in those settings. Research that involves vulnerable or marginalized participants can produce complex ethical dilemmas that are often emergent, diverse, and embedded in the context in which the research takes place [1]. Overall, there is an increased focus on ethics in Child-Computer Interaction (CCI) [2] and many researchers in CCI find ethical considerations central to their work [3]. They value adherence to ethical considerations that are explicit in nature (e.g., consent process) as well as implicit in the structure of their research (e.g., agency) [4]. In spite of the increased focus on ethics in CCI, a recent literature review on 18 years of ethics in CCI research, demonstrated that while ethics is frequently mentioned, the literature remains underdeveloped in a number of areas, including definition and theoretical basis, the reporting of formal ethical approval procedures, and the extent to which design and participation ethics are dealt with [2]. The authors of the literature review proposed specific avenues of work that they believe should be leveraged by the CCI community. One of these

proposals is to address issues related to situational ethics in research papers, as this could lead to new formal procedures that are better attuned to CCI research. Despite various initiatives in recent years such as panels on ethics [5, 6], a keynote [7], workshops e.g. [3], and the mandatory section on "selection and participation of children" in the IDC paper template, this has not yet led to an increase of papers dealing with critical cases of situational ethics during the research and design process [2]. Additionally, we have noticed ourselves that there seems to be a lack of discussion in the CCI community about practices for teaching ethics in CCI. We therefore believe that illustrative examples of situational ethical dilemmas from both experienced researchers such as in e.g. [8, 9] as well as from students could be highly useful for teaching ethics in CCI. Therefore, in this paper, we report on a case study where we asked our students to give us the most prominent ethical dilemmas they experienced when designing children's technologies during a course dedicated to this topic.

2. Background

Ethics has a long tradition and has been addressed in many research areas, often from a multidisciplinary perspective, in fields such as philosophy (e.g. [10]), medicine (e.g. [11]), the social sciences (e.g. [12]), learning sciences (e.g. [13]), human-computer interaction (e.g. [14, 15, 16]), design (e.g. [17, 18, 19]), and participatory design (e.g. [8, 20].

When teaching ethics to students in a CCI course, there are several ethical principles at stake. A normative ethical guideline that often underpins teaching in CCI is that children should be involved actively in the design process. This guideline is also the main process-related guideline as defined by the global non-profit organization Designing for Children's Rights [21], which integrates children's rights in the design, business and development of products and services around the world. Students should thus become aware of the necessity to include children in their design process. However, once they are aware of this, they should have knowledge on how to involve children in an ethical way. Here we can distinguish two different dimensions of ethics in research, namely formal or procedural ethics and situational ethics [22, 16], also called "ethics in practice" [22, 23], "in-action ethics" [9], or "micro-ethics" [8]. Formal or procedural ethics is determined by laws, norms and guidelines, and students need to learn how to e.g., apply for ethical approval and to obtain the proper informed consent from both parents and children. However, as indicated by many scholars (e.g., [22, 16]), understanding procedural ethics does not prepare the researcher or designer for dealing with ethical problems that arise in the practice of their work in the field. Situational ethics deals with making judgements and decisions in real time through careful observation, awareness and sensitivity [23]. In their paper, Guillemin and Gillam [22] propose to "draw on the notion of reflexivity as a helpful way of understanding both the nature of ethics in qualitative re60 search and how ethical practice in research can be achieved". They suggest that being reflexive means that the researcher acknowledges the fact that there are ethical dimensions of ordinary, everyday research practice, that the researcher is sensitive to the "ethically important moments" in research practice, and that the researcher has or is able to develop a means of addressing and responding to ethical concerns if and when they arise in the research. However, situational ethics is not regularly addressed within CCI. A recent review [2] found that situational ethics was only addressed in 2% of all 157 papers mentioning ethics in the CCI research field. In this paper, we aim to provide categories of example situations experienced by students interacting with children. These examples can be used to teach future students about situational ethics.

2.1. Teaching Ethics in HCI

In the broader field of HCI, several authors have also called for initiatives to address ethics in design. Lilley and Lofthouse [24] set out to develop teaching material which will help foster responsibility in design students by encouraging deeper reflection on the social, environmental and ethical implications of design for sustainable behaviour. Similarly, Nilsson et al. [25], Frauenberger and Purgathofer [26] are developing teaching materials for educating responsible designers. Finally, Pillai et al. recently argued that beyond defining ethics, an ethics curriculum must enable practitioners to reflect and allow consideration of intended and unintended consequences of the technologies they create from the ground up, rather than as a fix or an afterthought [27]. In a workshop, they therefore aim to build upon existing practices and knowledge of ethics in HCI and enrich ethics curriculum [27]. While these initiatives mainly focus on taking responsibility for the effects of the technology that is being developed (which we think is indeed also very important), this paper focuses on situational ethics of students involving children in the design process. By providing a rich set of "ethically important moments" as experienced by our students, we hope to provide other teachers of CCI courses with some material to sensitize their students and make them better prepared to address their own ethical dilemmas.

3. Method

The case that we are presenting here consists of a clustering and exemplification of the ethical dilemmas experienced by 45 students in an eight week international master level course in designing children's technologies. These dilemmas were described by the students as part of the course and were based on their experiences of a design project with children. During this project, the students had to involve children in design activities at least three times, preferably during user research, co-design, and evaluation activities.

In the course, the students were taught the basics of CCI, such as theories about child development, ethics and ethical consent, pedagogical perspectives, design methods, evaluation, design guidelines, and design for special needs. One of the learning goals for the course was "Being able to make an informed evaluation of the ethical and societal impacts of a design". To ensure constructive alignment, the students received a lecture on ethics, mandatory literature, and supervision. The learning goal was the also addressed as one of the assessment criteria during the exam. By asking the students to explicitly describe their "ethically important moments" we aimed to support reflexivity. The lecture on ethics included information about formal national laws and directives, UN conventions and templates for consent, safety and risk assessment, issues of consent, consent for video and photo, selection of participants, inducements, and privacy. This lecture was complemented with chapter four from the book Evaluating Children's Interactive Products by Markopoulos et al. [28], and illustrated with reflective case examples from the teachers' own experiences from research. In addition to this, some students also made use of the ethical frameworks from Cooper [29] and Farrell [30], however, this was not part of the mandatory course literature.

During the project, the students had weekly supervision with a university supervisor, and upon completion of the course, the groups presented their projects to the class and authored a written report about their project. For an overview of the student groups and their design projects, see Table 1.

Group	Context	Age	Design
1	Primary school	10-12	Collaborative game
2	Primary school	7-8	Collaborative tabletop storytelling
3	Primary school library	8-12	Augmented reality question game
4	Preschool	3-4	Collaborative robot game
5	Primary school library	6-12	Geography game on information seeking
6	Library	10-12	Queuing system for help in classroom
7	Preschool	5-6	Private digital space to express feelings
8	Preschool	4-5	Application that teaches baking
10	Preschool	4-5	Collaborative interactive stories
11	Hospital	7-11	Augmented tangible collaborative play
15	Primary school library	11-13	Programming game
16	Home	11-12	Application to support baking

Table 1: Overview of student groups, contexts, age of the participating children, and design projects.

The data we present here come from the final written home exam where the students were asked to answer one of the following questions (among others): 1) identify one ethical dilemma experienced during the design process. Describe how you solved it and how you would do it differently next time. 2) Methodologically, which ethical dilemmas did you foresee and how did you prepare for them? or 3) What are the ethical consequences of your design?. For this paper, we only analyzed the answers to the first question on ethical dilemmas[1]. Since the students were not forced to answer this particular question, they are likely to represent actual experiences of the students. We clustered all written responses using a bottom-up approach on types of ethical dilemmas. We have sought consent for publishing the material stemming from the students' work retrospectively.

4. Results

We present the results using a chronological order during the design process, which may start with contacting children (usually through contact with responsible adults), asking for consent, and finally performing the design activities, see Table 2.

[1] the answers to the third question pertain clearly to calls for taking responsibility for the outcomes of the design, such as the one by Pillai et al. [27]

Main theme	Sub-themes
Selection of participants	Not all children in the context belong to the target group
	Not being able to facilitate large groups
Informed Consent	What is the appropriate level of detail about the activities?
	How to deal with informed consent of groups of children?
	Can children freely give their consent in a school context?
Working with children	Stress during the activity
	Anonymity and Privacy
	Deception
	Creating Functioning Groups
	Presence of Students and Teachers

Table 2: Overview of the ethical dilemmas experienced by the students.

4.1 Selection of participants

All groups contacted responsible adults (e.g. school head masters, parents) to get into contact with several children. This sometimes led to ethical dilemmas related to the selection of children once the students had acquired access to the children through these adults.

4.1.1 Not all children in the context belong to the target group

One of the groups acquired access to children at a school library. However, when starting with their project they found that it was not feasible to design a game that could successfully engage and teach new things to the whole target group of the school's library: 6-15 years old. The students thus experienced the ethical dilemma of giving children equal opportunities versus not gathering more data than necessary. In order not to disappoint children outside the target group of their game, one student suggested to simply let everyone who wanted to join do that, but only account for the data acquired from test participants from the desired age group.

4.1.2. Not being able to facilitate large groups

One group felt they did not have the capacity to facilitate a whole class of children in the design activities. In first instance, they therefore asked the teacher to choose six participants from the class. However, during the first session they found out that the rest of the class was disappointed for not being chosen: "children in the classroom were upset when they noticed that they were not part of the workshop. They asked why they did not be chosen, some of them were so sad and even burst out crying". Therefore they let the whole class take part in the second activity. Unfortunately, they experienced several children could not keep their attention on the activity during such a lively situation. In their reflection, one of the students suggested to duplicate the activity instead, acknowledging that this would put a higher demand on the amount of time from the researcher as well as the school.

Another group ran into a similar problem in a preschool class. However, they dealt with this by relying on a common practice for selecting children in this preschool context:

they only invited the eldest children from the class. Since this was a regular practice, this was also fully acceptable to the children.

4.2. Informed Consent

A very common category of dilemmas that the students experienced was related to getting informed consent. Three general dilemmas could be discerned: 1) What is the appropriate level of detail about the activities? 2) How to deal with informed consent of groups of children?, and 3) Can children freely give their consent in a school context?

4.2.1. What is the appropriate level of detail about the activities?

The first important dilemma the students dealt with was how to write a proper consent form to reach out to the schools when they did not have a clear picture of what they wanted to do yet, or when they did not want to reveal the complete setup of the activity to the children beforehand. One group asked the children orally for their consent without clarifying exactly what they were giving their consent for. The reason was that they did not want the aim and theme for the activity to influence the children during the activity, which was to reveal if the children were affected by prejudices regarding gender, norms and stereotypes. However, the children's parents received information regarding the topic and aim in the consent forms, so they could give their consent with full information regarding the study.

4.2.2. How to deal with informed consent of groups of children?

Most students were not involving individual children in their design activities, but rather children in groups. This often gave rise to problems in dealing with consent forms. For example, what to do when some consent forms are missing? Should the group be divided into smaller groups with children with and without consent? What to do with different levels of consent when some children can be photographed and recorded while others cannot? How to deal with groups of children in the library where it is not clear who will be visiting? Special situations arose when for example only one child did not have consent. Although some students chose to exclude this child from participation, they noticed that this lead to negative feelings. The students came up with some suggestions to deal with those situations. Some students suggested to pick a smaller and random group of children to participate in the design activity and make it transparent to all children how they were chosen.

For example, one group experienced that when returning to the school for testing their prototype, only five of about twenty children had signed consent forms. The teacher divided the groups so that children with a signed consent form were in one group. No photos or video were taken of the children whose parents had not signed the form, but notes and feedback from all the groups were kept. In this case, the teacher saw the prototype test as a school activity for the children, and therefore all the children should participate.

Another group of students chose to only document children with consent forms, but allowed all children to participate in the activity.

In case of the library, one group of students asked the responsible adults (principal and librarian) to sign the consent forms while the children were asked orally. They also decided not to use any photo or video material for documentation. Another group created information sheets as substitutes of consent forms, which the librarian then included in a newsletter sent weekly to parents and could give consent on the child's behalf.

4.2.3. Can children freely give their consent in a school context?

A final dilemma the students voiced was the fact that it is questionable to ask children about their consent in a school context. The students wondered if there was a real option of opting out, especially when there was a teacher present with authority over the children. During encounters with the children, it was experienced that the teacher had quite a distinct role in deciding what the children did and were allowed to do. One student was a bit hesitant for how to cope with this, and reflected that it would have been possible to ask everyone in plenum. However, as voiced by another student, this could lead to group pressure to participate. Another option suggested by a student could be to ask each of the children individually whether they wanted to participate, although the student pointed out that this might not be feasible in a classroom context.

One student wrote that their group experienced a teacher forcing a child to participate in a design activity against the child's will, probably in good faith to help the students. As it posed no immediate harm to the child it had not seemed unethical. A student reflected: "However, the relationship between researchers and the children, compared to the relationship between preschool teachers and the children is very different. For various pedagogical reasons, it's sometimes necessary for the preschool teachers to set boundaries for children, and even forcing them to things which they don't want to do. Common examples of this is forcing children to wash their hands when they are dirty, put on warm clothes when it's cold outside or even forcing them to eat their vegetables. However, if researchers for the purpose of various studies ignore the consent of children on the behalf of the research goal, it might render harm to the children in various ways, as well as endangering the validity and reliability of the gathered data." Although this was difficult situation for the students, they solved the problem retroactively by informing the teacher about ethical considerations from their point of view. In the future, they would inform any responsible adult of this proactively, to avoid similar situations.

4.3. Working with children

While performing the activities with the children, the students also experienced some ethical dilemmas, both socially and practically.

4.3.1. Stress during the activity

Some students mentioned that they feared that the design activity could make some children feel stressed if they would get the feeling of being tested. Although the students tried to explain to the children that it was the system that was being tested,

not the children, they still worried that the children could feel uncomfortable, which could also influence the validity of the results.

One student noticed that the way their group activities were constructed actually left some children in a quite exposed, social position where they might have felt less comfortable than others in the group. Although the students did not observe significant signs of severe distress during the workshops, they could see that social hierarchies could become a psychologically stressful element when participating in the activities. The students reflected constructively around this by pointing out that it might be important to explore how group or collaborative activities can be constructed to inhibit or reduce elements of social discomfort, or increase the involvement of different children.

Another group noticed a very distinct change of mood in the children when their design activity change from being cooperative into having a competitive element towards the end: “It was almost hard to watch, the children who had been quick and confident before seemed to crumble under pressure, smiles turned into frowns. But we had started it, so we had to see it to the end. As soon as one team figured out the solution the other side simply gave up, even though we tried to encourage them to continue, they had simply lost their interest”.

4.3.2. Anonymity and Privacy

As written in the informed consent forms, the students would only share anonymized information from the children. The most common anonymity dilemma the students experienced was that children wrote their names on their creations even though they were explicitly asked not to.

4.3.3. Deception

In some cases, the students felt that they could not reveal their intentions behind the design activity from the beginning. One group worked on developing a technology to alleviate social isolation for children in hospitals. Instead of pointing to the actual isolated situation of the child in a hospital, they chose to use the analogy of flying to the moon and asked the children how they could keep contact and play with their friends on earth. Although the students saw the problem with deceiving the children, they felt it was better if the children perceived the workshop as fun instead of focusing on their social isolation. “However, I will argue, deceiving can be done in a non-cruel manner. We treated them nicely and as equal partners. If respect is seen as the sum of how the children were treated the result would be positive. One could say we respectfully disrespected the children. Relating to justice we treated all children equally—no one was deceived more or less than others. Therefore, we treated them justly.”

Another student reflected on the dilemma that their group on the one hand did not want to reveal the aim of the activity because it could impact the results, but on the other hand felt that the children could have gained more learning from the workshop if they had actually known why they were doing what they did: “It was also obvious some of the children felt distress by the fact that they could not understand the purpose with the session, since they frequently asked “Why?”, “Why are we doing this?” ”.

As a solution, one of the students suggested to inform the responsible adults before the activity, and then inform the children directly afterwards. In case of using a Wizard of Oz prototype, the students felt that parents and guardians should always know clearly what was happening and how the activity or system was working, but that it would be OK to deceive the children as long as it was not harmful.

4.3.4. Creating Functioning Groups

The students experienced that it was challenging to accommodate for the children's different capacities and abilities, and to support equal participation, especially when there were many children per student facilitator. One group for example found that their prototype assumed a certain reading proficiency that not all children in the group possessed. Their solution was to resemble how they usually learn letters in their everyday school setting, to increase the possibility that everybody could participate equally. Other students struggled with the fine balance between allowing children's individual pace and the importance of collaboration.

Several groups struggled with how to deal with gender issues when creating groups. One group chose to hide their intention to have a mix of boys and girls in each group, but ended up with children not wanting to participate because they were not with their friends. Another group was open about their intentions to mix boys and girls, which was accepted by the children. One student proposed to let the children decide the groups themselves or invite the teacher to do this.

4.3.5. Presence of Students and Teachers

Finally, some students noted that their own presence could make it impossible for the children to express their thoughts about the design or the design activity in an honest way. Similarly, the students noticed that the children acted differently when the teacher was present. The students mentioned that the adult's attitude towards the design therefore could have a big impact on what the children may learn from participating in the activity. However, the teacher's presence and engagement with the children also made it possible for the children to communicate with a person that they felt comfortable with and trusted. Furthermore, the students also saw the teacher's presence as a doublesided security measure, guaranteeing the children's safety on the one hand, but functioning as an eye-witness of the students' ethical conduct on the other hand.

5. Discussion and Future Work

One of the underlying ethical principles in the field of Child-Computer Interaction is that designers should actively engage children in their design process. Students in this field should thus become aware of this necessity and then practice working with children to become responsible designers. This requires that they are knowledgeable about formal ethics. However, there is clear divide between the formal ethics such as formulated in Institutional Review Boards (IRBs), and the ethical problems faced by researchers when working in the field, e.g. [8, 9, 7], called situational ethics. Students thus have to be prepared to deal with situational ethics, during their course work and as a

preparation for their professional practice. Guillemin and Gillam [22] advise qualitative researchers to identify "ethically important moments" when working in the field. In this paper, we have clustered and described several of those moments as reported by students in the field of CCI during their final exam. This brings us to two main recommendations for teaching situational ethics to students in this field. First of all, students could read about experiences of situational ethics by others, both novices such as themselves, and professional designers. This paper is a first starting point, however, we also urge the community as a whole to start sharing situational ethical dilemmas from their own research practice. This is in line with the future directions for CCI as defined by [2]. Secondly, we think it could be good practice for teachers in CCI to always explicitly ask students to reflect on those "ethically important moments" as part of their course work. In our case, we included this reflection in their exam, but it could also be a part of a final report, or an obligatory part in smaller assignments. For example, the students could be asked to keep a diary where they note down and reflect on such moments as a kind of reflection-on-action [31].
In the next section of this discussion, we will address a specific characteristic of many of the ethically important moments as described in this paper. Thereafter, we will discuss some of the limitations of our work.

5.1 Working with Children in a Hybrid Realm

According to Guillemin and Gillam [22] it is ethically problematic to ask people "to take part in, or undergo, procedures that they have not actively sought out or requested, and that are not intended solely or even primarily for their direct benefit". They propose that this tension can be resolved by allowing 365 people to make the research their own project jointly with the researchers, and becoming participants in the research rather than subjects. This is indeed one of the premises of participatory design, which underpins much of the teaching in CCI.
According to Muller [32] participatory design resides in a hybrid realm between the two distinct work domains of the software professionals (the student designers) and the end-users (in this case the children). Through participatory design practices, the aim is to involve children in the design process, not as passive subjects but in ways that empower them. However, when working with children in such a participatory way, other adults, such as teachers, caretakers and parents also play an important role in this hybrid realm [33]. Indeed, from what we can see in our students' experiences, this causes several specific ethical dilemmas. So, while the students on the one hand need to allow the children to make the research their own project jointly with the researchers, they also need to deal with those adults. While children may have their own way of making the design project their own (e.g., it is a fun activity different from the usual activities), the responsible adults may have different reasons for allowing children to participate (e.g., it is an educational experience to meet designers) [34]. Students working in this hybrid realm thus also have to balance these different motivations. One way to address this is to recommend students to involve adults in creating learning goals for the design activities, as suggested in [35].

5.2. Limitations

The fact that the dilemmas were derived from students' written reflections as part of their written home exam can have created some pressure to come up with dilemmas. However, by offering our students the choice to alternatively address the question how

they avoided some problems or to reflect on the ethical consequences of their design, we aimed to avoid such pressure. Furthermore, the contexts in which the students performed their design work have primarily been public institutions such as schools and kindergartens, while only one group acted in an home environment. We acknowledge that other types of dilemmas could appear in other types of contexts. However, we do think that especially the involvement of other adults than the designers when working with children may lead to several of the ethical dilemmas mentioned in this paper.

Although this paper focused on the situated ethical dilemmas as experienced by our students when working in the field, several researchers have called for the creation of teaching materials related to the intended and unintended consequences of technologies. Indeed, in the exam for our course, students were also allowed to reflect on possible ethical dilemmas related to the technology they were developing, which several of them did. These dilemmas clearly showed that students also require guidance on how to design responsibly as they may approach their own or others' designs from a single, narrow perspective without realizing the potential impact on a broader society. Evidently, designs can have widespread consequences and long term effects on various stakeholders beyond those stakeholders initially imagined, both in positive and negative ways. If students lack an understanding of the broad impact and long term effects of their designs, they run the risk of inadvertently causing more harm than good in society. We thus think it could be useful to develop teaching activities around values, such as dedicated envisioning activities [36, 37] for the design of children's technologies. These teaching activities could explicitly take into account some of the literature on child development. This would allow for consideration of intended and unintended consequences of the technologies they create from the ground up [27]. We are aware that our paper only addressed a particular form of ethics and did not focus on envisioning such consequences. In order to foster responsible thinking [26], and eventually foster responsible designers of children's technologies [25], all different ethical aspects need to be addressed.

6. Conclusion

Teaching about ethics in the design of future technology targeting children is currently gaining momentum, and we believe that it can significantly contribute to moving the field of Child-Computer Interaction forward. However, this development also demands advancement of theory, methodology, and practices in teaching students how to behave in an ethically responsible manner when designing for and with children. As highlighted in the introduction, there are still few academic examples describing how to teach students to become responsible designers who are attentive to ethics in design. By sharing the experiences of ethical dilemmas from our students, we invite all teachers to share activities and practices for teaching ethics in CCI. By doing so, we hope to support teachers across a range of educational and cultural contexts to educate ethically responsible CCI designers of the future. For future work, we see an opportunity and need for developing educational materials on ethical matters and practices in CCI for novices.

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Group	Context	Age	Design
1	Primary school	10-12	Collaborative game
2	Primary school	7-8	Collaborative tabletop storytelling
3	Primary school library	8-12	Augmented reality question game
4	Preschool	3-4	Collaborative robot game
5	Primary school library	6-12	Geography game on information seeking
6	Library	10-12	Queuing system for help in classroom
7	Preschool	5-6	Private digital space to express feelings
8	Preschool	4-5	Application that teaches baking
10	Preschool	4-5	Collaborative interactive stories
11	Hospital	7-11	Augmented tangible collaborative play
15	Primary school library	11-13	Programming game
15	Home	11-12	Application to support baking

Table 1. Overview of student groups, contexts, age of the participating children, and design projects.

Main theme	Sub-themes
Selection of participants	Not all children in the context belong to the target group Not being able to facilitate large groups
Informed Consent	What is the appropriate level of detail about the activities? How to deal with informed consent of groups of children? Can children freely give their consent in a school context?
Working with children	Stress during the activity Anonymity and Privacy Deception Creating Functioning Groups Presence of Students and Teachers

Table 2. Overview of the ethical dilemmas experienced by the students.

Ethical Dilemmas Experienced by Students in Child-Computer Interaction- A Case Study

We have no conflict of interest.

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