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# Values-led Participatory Design with Children: Reflection on Action

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**Abstract**

We describe a values-led participatory design (PD) process with children in a project that aimed to tackle bullying in the social context of the class. Children collaborated in small teams to think of ideas and co-construct solutions that would increase their self-regulation in the prevention and intervention of bullying. The resulting artifacts and their verbal explanation were analyzed beyond the surface level of children's ideas to identify the underlying discourse and values. This was an interpretative process for which we relied on the GLID method. In this paper, we present the PD process and we reflect on topics for further research.

**Author Keywords**

Participatory Design; Co-design; Values; Children

**Introduction**

PD is a well-known methodology that can be useful in the fuzzy front end of design, to determine the specific experiences to aim for when designing technology. Future users are at the core of the methodology: in PD, these users are considered co-designers of their technology, and of the practices that may be reified in that technology. In an attempt to determine the specific experiences to design for, recent work by Iversen et al. [1] has attempted to rekindle values in a more 'authentic' approach towards PD. This work focuses on the values that emerge and develop over the course of the

design process. Instead of taking values for granted, Iversen et al. start from the emergent values as 'the engine that drives the design process' [1].

The project discussed in this paper fits within this values-led approach to PD. The aim of the project is to tackle bullying in the social context of the class group. In what follows, we first discuss the PD process and how we accounted for values. Then, we briefly reflect on the process and discuss topics for future work, relevant for the CHI workshop on Values in Computing.

### **Participatory Design Process**

#### *Overall Scope of the Project*

The overall scope of the project was to empower children by enabling self-regulation in tackling bullying, both in prevention and intervention. To this end, we wanted to develop digital, tangible tools to facilitate children to take their own initiative to create a safe class environment. Whereas most existing approaches to combat bullying focus on either traditional or cyber bullying, this study looked at the interrelationship and how both forms manifest themselves in the social context of the class.

We conducted two studies to better define the problem space. First, we involved teachers and educational experts in a series of mapping sessions. Afterwards, we involved children in two co-design sessions. Based on a comparative analysis of the results of the mapping and co-design studies, we formulated a set of design recommendations. Here, we reflect on the co-design sessions: (1) how we enabled children to voice their opinions and ideas, and (2) how we analyzed the co-design outcomes by looking beyond the surface level of children's ideas to identify underlying values.

#### *Co-design Sessions with Children*

49 children aged 9 to 10 were involved in a series of co-design sessions in two schools in Flanders, Belgium. Our aim to design tangible, digital tools to make class groups more self-regulatory in tackling bullying was translated into an understandable design challenge for children: What tools would improve the class atmosphere and prevent bullying? This focus on prevention was suggested by the teachers and experts during the mapping sessions. To make it more tangible, we used a fictional story of a class with a negative atmosphere as a starting point. In the story, our own values with regard to the problem of bullying were embedded: we aspired a proactive approach that would increase children's self-regulative behavior, with the ultimate goal to create a safe environment for children. Although we started from these preliminary value orientations (prevention, increasing self-regulation) and from a broad view on what was to be designed (tangible, digital tools), these preliminary ideas were open to change. During the co-design sessions, we allowed children's work to broaden our perspective.

Over a period of one month, two co-design sessions were organized in two primary schools (150 minutes each) preceded by a general introduction (50 minutes), resulting in three visits per school. The first author facilitated all sessions. For a detailed description of the co-design procedure that was used, we refer to [2][3].

During the introduction we explained the overall design challenge and introduced the fictional story. We furthermore introduced four individual assignments to trigger children's reflections about the design challenge and to prepare them for the co-design sessions. The aim of the first co-design session was to create cohe-

sive teams and, for each team, to define two problems based on the story and the design challenge. The aim of the second co-design session was to design and prototype tools to tackle bullying in class. Each team brainstormed, grouped and selected ideas and built a three-dimensional prototype incorporating these ideas. For this purpose, teams received a bag full of prototyping materials. The session ended with presentations and a short group discussion about how we would take their designs forward in the next design stages.

The co-design sessions resulted in various outcomes that were analyzed with the GLID method [4]. With GLID, verbal, material and other co-design outcomes are integrated in a structured and coherent analysis. GLID aims to go beyond the surface level of ideas, by identifying participants' values embedded in co-design outcomes. Following the GLID procedure, we looked at the evolution from initial ideas to final solution, the proposed functional and non-functional attributes, the solution's orientation (i.e., how it intervenes and changes a particular social reality), organization (i.e., how it presents a coherent solution) and, finally, its underlying socially-shared values [4].

After this analysis per team, the results were compared across teams, and with the viewpoints of teachers and educational experts (a paper about the results and design guidelines is currently under review).

### **Discussion and conclusion**

The goal of the co-design activities was to generate ideas for future technologies and practices that would cope with bullying behavior in school. The co-design techniques served as constructivist tools to assist investigations of 'what may be' rather than simply 'what

is'. The simultaneous act of making and reflection in the co-design activities increased children's awareness about the complexity of bullying behavior and how to establish and maintain a good class atmosphere. For example, a team of 5 children, The Collaborators, invented a Hypnotize Machine. With this industrial looking object, victims can hypnotize their bullies so they will not laugh at them again. Sad children can also use the machine to hypnotize themselves to become happy. The teacher regulates the use of the machine.

Overall, children collaborated constructively while negotiating and building a solution. However, they did not explicitly discuss their values and value trade-off processes. This may be due to children's developmental characteristics. The participants were 9 to 10 years old and although they were verbal and self-reflective enough to discuss what they were thinking, according to Piaget children's abstract thinking skills are only beginning to develop at this age [5]. This implies that, when it comes to abstract concepts such as 'values', 9- to 10-year-olds may still have a difficult time verbalizing their thoughts and much of what they say needs to be interpreted in relation to concrete experiences [5].

Co-design techniques proved to be particularly useful here, because the making activities stimulated ad hoc reflection and children did not have to think about complex and abstract issues without specific reference materials. In addition, since values are critical motivators for people's attitudes and behavior [6][7], the way in which children approached the design challenge and co-constructed a solution told us something about their values. The artifact (e.g., the Hypnotize Machine) and its verbal explanation were the result of a collective sense-making process in which children's negotiated

values were embedded, be it implicitly. This process, which Ehn [8] refers to as collective reflection-in-action, is at the heart of PD. With the GLID method [4], we were able to arrive at a situated understanding of the values that underpin these co-design outcomes. For instance, the values deduced from the Hypnotize Machine and its verbal explanation include a focus on 'victim empowerment' and a combination of 'top-down with bottom-up regulation' to tackle bullying in class. Values resulting from other co-design outcomes are 'positively reinforcing victims', 'facilitating collaborative and pretend play', and 'supporting emotional literacy'. Deducing these values was an interpretative process. Since the process of interpretation is not value free, multiple and equally valid interpretations can co-exist. This means that, when other researchers would have analyzed the data relying on the GLID method, it could have resulted in different readings. Therefore, it is important to be aware of the values that you bring to the co-design process, and to explicate how these values influenced your interpretation. This type of reflexivity is important to increase transparency and avoid confirmation bias. This aligns with Frauenberger et al. [9] who recently called for more internal rigor and accountability in PD practices.

On a final note, since children were not involved in the analysis, it is important to debrief them about the results and to continue their participation. The emergent values should be reconsidered when developing and testing the technology.

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