# With the Best Intentions – a Foucauldian Examination of Children's Genuine Participation in ICT Design

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**Abstract**

**Purpose:** Children have been recognized as an important user group for Information and Communication Technology (ICT) and methods for involving them in ICT design have already been devised. However, there is a lack of research on children's genuine or authentic participation in ICT design as well as a lack of critical research scrutinizing how 'children' and 'their participation' actually end up constructed in ICT design. **Methodology/approach:** A qualitative data archive of a past project involving children in ICT design is examined through a Foucauldian lens. **Findings:** The study reveals that numerous discourses can be relied on when talking about 'children' and 'their participation' in the case project. For example, 'children' were constructed in varying ways as equal partners and influential, but also as ignorant, ignored, silent and silencing each other. Some of the findings are in line with the existing ICT literature on the matter, others even with the literature on genuine participation of children. However, children and their participation were also constructed as 'problematic' in different senses. **Research limitations/implications:** The study contributes to and opens up avenues for critical research on genuine participation of users, especially children. **Practical implications:** Practical suggestions for researchers interested in participation of children in ICT design are provided. **Originality/value:** While research literature offers an abundance of best practices and an idealized view on children and their participation, this study shows the multitude of challenges involved and discourses circulating around.

**Keywords:** Children, participation, genuine, discourse

**Article Classification:** User participation, discourse analysis, human computer interaction, end user

## 1 Introduction

Children are a significant group of information and communication technology (ICT) users whose voices should be heard when decisions concerning them are made. Brady (2007) identifies three trends



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contributing to this. Firstly, Article 12 of the UNICEF Convention on the Rights of the Child states that adults need to create opportunities for children to express their views. Secondly, in line with a growing consumer movement, children as consumers of goods and services should have the right to influence the nature of goods and services they are offered. Thirdly, the field of sociology sees children as an independent social group instead of an extension of their parents. This has influenced for instance research conducted in local environment planning and design that has become interested in involving children in environmental planning and design processes (Brady, 2007). Moreover, children's participation has been seen as contributing to their education, as participation enhances their personal and social skills, thus giving them useful skills as members of society (Sotkasiira et al., 2010). The genuineness or authenticity of children's participation has also aroused researchers' interest within these fields. Genuine participation has been defined based on the participatory process itself (Hart, 1992) or on the resulting outcomes (Iacofano, 1990). Interest in genuine participation has aroused to evaluate whether participation is merely tokenistic or decorative, or in fact genuine, having an impact.

Information systems (IS) research, despite paying little attention to children, has for long emphasized the importance of users' participation in ICT design. The early Scandinavian IS tradition perceived user participation in systems design as the users' right, i.e., it maintained that users and their trade unions should be allowed to have a say in issues affecting users' work. The more recent participatory design (PD) tradition, on the other hand, while de-emphasizing the political orientation of the Scandinavian tradition, has contributed via a number of methods and tools that enable user participation in the design process (Greenbaum & Kyng, 1991; Schuler & Namioka, 1993; Simonsen & Robertson, 2013). Lately, the research fields of experience design (McCarthy & Wright, 2004), co-creation (Prahalad & Ramaswamy, 2004; Sanders & Stappers, 2008), and service design (Shostack, 1982) have emphasized the user participation aspect in the design of commercial products. Children's participation in ICT design, however, has been almost entirely neglected within these research streams, whereas it has been addressed within the field of human computer interaction (HCI), where children's participation in ICT design has been a research theme for decades. More specifically, the research field of interaction design and children (IDC) has devoted specific attention to involving children in ICT design. Within this research community, numerous ICT solutions targeted at children have been produced; further, various requirements elicitation, design, and evaluation methods to be used with children have been created (see Druin, 2002; Jensen & Skov, 2005).

Children's participation has also been studied in the fields of child development, cultural and social psychology, environmental psychology, human geography, community development, environmental education, educational sociology, and urban planning (Malone & Hartung, 2010). From these research fields, one can find an explicit emphasis on the genuineness of children's participation (e.g., Chawla & Heft, 2002; Hart, 1992; Iacofano, 1990) that is considered crucial when working with children: researchers should beware that children's participation does not become only decoration or manipulation (e.g., Hart, 1992). This requirement resonates well with the earlier Scandinavian IS and PD traditions that emphasize that users should truly have a say in issues affecting their lives (Greenbaum & Kyng, 1991; Schuler & Namioka, 1993; Simonsen & Robertson, 2013). As regards children's participation within our discipline, IDC research relies on the assumption that children provide valuable expertise on "what being a kid" entails; this expertise should be utilized during ICT design (e.g., Druin et al., 1997), and children should be treated as equal design partners with adults (e.g., Druin, 2002). However, the genuineness or authenticity of children's participation has not been evaluated or reported in any more depth, even if we do not claim that it has intentionally been

neglected either. Certainly, researchers have had the best intentions when involving children in ICT design, but in the extant literature there is no explicit consideration of the requirements for genuine and authentic participation, as is the case within other research fields addressing children's participation. Some attempts toward the direction of explicating the aims, values, and challenges shaping children's participation have been made within the IDC research community, including calling for reflecting on and foregrounding the values driving our studies (Yarosh et al., 2011), proposing check lists for foregrounding the values behind working with children (Read et al., 2013), pondering on the PD ideals versus practical objectives of a project (Holone & Herstad, 2013), as well as reflecting on the original PD ideals in relation to current PD work with children (Iversen & Dindler, 2013). However, these studies do not provide an in-depth examination of the issue of children's genuine participation in ICT design. This is the research gap we wish to address in this study.

For our own effort at participatory ICT design with children, we familiarized ourselves with earlier IDC research on children's participation in ICT design and tried to follow these principles in our own research. Our project produced interesting results, but some doubts remained as to our success in achieving the full genuineness of children's participation despite our good intentions. We will present a retrospective discussion on this matter based on Chawla and Heft's (2002) framework for children's genuine participation and consider how our results can be utilized in further participative work with children. Our study is inspired by the Foucauldian analysis of discourses that was in this case applied to our own research which attempted to carry out participatory ICT design with children. We consider our research data on the past project as an archive that we now scrutinize using the lens of genuine participation. Foucauldian analyses have aroused interest in IS research in recent years (for empirical studies, see, e.g., Berg et al., 2005; Doolin, 1999; Edenius, 2002; Jackson et al., 2006; Kreps, 2009; Sayer & Harvey, 1997; Thompson, 2002, for reviews, see, e.g., Brooke, 2002; Stahl, 2004; Stahl et al., 2011; Willcocks, 2004). Some studies (Cooper & Bowers, 1995; Finken, 2003, 2005; Hyysalo & Lehenkari, 2002; Markussen, 1994, 1996) have already examined HCI and PD research or practice in a Foucauldian spirit as discourses that construct their objects of study in particular ways and legitimize their existence. The studies have focused on how (power) relations between users and designers are constituted and criticized the designers' authority. In a similar vein, we will inquire our research project, involving children as one participant group, constructing "children," their "participation," and overall, the relations between the various design participants in particular ways. This kind of inquiry (regarding child participants) is currently lacking, but is desperately needed, as children are an even more vulnerable and dependent group of people than adult users. Even with adult users, it has been shown that designers have assumed the ultimate authority and silenced the users in ICT design. Hence, in this study, we ask the following question: "How genuine was the children's participation in our project?" We will also ask the following, more discourse analysis oriented research question: "How were children, their participation, and the relations between the various design participants constructed in our project?" Through answering these questions, our study will contribute to the IDC research literature by discussing the requirements and challenges of children's genuine participation in the ICT design context. These findings will also be valuable for the critical IS research interested in user participation and empowerment. As children have remained invisible in IS research thus far, this study also contributes simply by making visible this unusual and vulnerable user group that should not remain neglected in future IS research.

In the following section, we will go through related research on children's participation firstly in ICT design within the IDC research field and secondly by addressing the genuineness of participation within some other fields of research. Next, we will present our research strategy of nexus analysis, our

data analysis approach—the Foucauldian analysis of discourses— and our data as well as the process of data analysis. Our empirical findings will follow. Finally, we will discuss the implications of our findings and possible paths for future work.

# 2 Related research

The sections below will introduce research on children's participation in ICT design as well as research on children's genuine participation.

## 2.1 Children's participation in ICT design

There is an abundance of research in the HCI field about children's participation in ICT design and evaluation starting from the 1980s (Druin, 2002). The design models of user-centered design, participatory design (Schuler & Namioka, 1993), learner-centered design (Soloway et al., 1994), informant design (Scaife et al., 1997), contextual design (CD) (Beyer & Holtzblatt, 1999), cooperative inquiry (Druin, 1999), experience design (McCarthy & Wright, 2004), and co-creation (Prahalad & Ramaswamy, 2004) have all been applied in studies to involve children in the design process. They build on the theories of child cognitive development (e.g., Piaget and Vygotski), but also on many other theories and empirical studies on children's perceptual development and the development of memory and motor skills, among others (see Hourcade, 2007).

Originally, when working with children, the focus was on children as users of technologies and understanding how ICT affects children's lives (user as subject, cf. Sanders & Stappers, 2008), but later, children's involvement expanded to other roles as well, as in the case of adult users, namely, being a tester, an informant, or a design partner (user as partner, cf. Sanders & Stappers, 2008; Druin, 2002). Each of these roles has its own use, depending on the resources, intentions, and philosophy of the participative project at hand (Druin, 2002). Different kinds of usability evaluation, requirements gathering, and cooperative design methods have been developed for design sessions with children (see Jensen & Skov, 2005), often with the intention of giving children the opportunity to learn something new as well. In the design sessions, one of the traditional yet still current methods for requirements gathering is drawing (Kuure et al., 2010; see also Kellogg, 1969; Anning, 1997). Children have also been asked to interview others (van Doorn et al., 2013), play reporters (Bekker et al., 2003), or tinker with technological tools (e.g., designing robots from LEGO blocks via simple programming, Resnick et al., 1988 or creating pianos using bananas, Resnick & Rosenbaum, 2013). Children have also told stories (Antle, 2003), imagined communicating with Martians (Dindler et al., 2005), drawn comics (Moraveji et al., 2007), and brainstormed and prototyped new designs (Hourcade, 2007). Children may also evaluate existing designs by providing information on their (user) experience of prototypes (Tang et al., 2013; Sim et al., 2013), e.g., in pairs (Hanna et al., 2004; Als et al., 2005), by thinking aloud (Van Kesteren et al., 2003), or by tutoring each other (Edwards & Benedyk, 2007; Hoysniemi et al., 2003). Even a framework for assessing usability testing methods with children has been created (Markopoulos & Bekker, 2003). Common to all these studies is that they are based on principles of participative design and they value children's contributions.

In the case of the "design partner" role, the word itself implies equality in the design process; this is what Druin advocates in her research: giving children the opportunity "to contribute in any way they can to the design process" (Druin, 2002). This is a challenging role for both child and adult participants, as it breaks the traditional power hierarchy (adults say how things are done and children

obey). When children are in the design partner role, they negotiate decisions equally with adults and both parties bring to the table their ideas and thoughts neither being more worthy than the other. The philosophy in this kind of thinking definitely implies an intention for children's genuine participation. Practical guidelines for lowering the barriers between adults and children and making the design sessions as equal as possible have been created and developed for different phases of design, starting with brainstorming for a new design and ending with evaluation of a prototype or a product (Druin, 1999; Druin, 2002; Hanna et al., 1997). In these guidelines, adults are asked, for example, to elaborate ideas equally with children, set the expectations of all parties (both adults and children) together, wear informal clothing, and use first names (Druin, 2002). However, apart from these general guidelines, studies are typically related to single design sessions with the purpose of developing specific technologies (Hourcade, 2007). Moreover, within the IDC community, there has been no tradition for an explicit consideration of the broader values guiding participative projects with children (Iversen & Dindler, 2013; Yarosh et al., 2011). Nonetheless, in any kind of participative project with children, there are many value-laden choices to be made and ethical considerations to be acknowledged. To make them visible, some literature addressing children's participation from other fields of research will be presented next.

## 2.2 Children's genuine participation

The fields of child development, cultural and social psychology, environmental psychology, human geography, community development, environmental education, educational sociology, and urban planning have also addressed children's participation (Malone & Hartung, 2010). In general, the aims of participation can be classified as follows: to generate knowledge of the children, to enable children's voices to be heard, to impact decision-making, or to empower the children (Dyson & Meagher, 2001). Much of this research can be widely categorized under the umbrella of the "ideal of active citizenship": discussions concern giving children a "voice" in formal public decision-making where the issues touch children's life-worlds and "agency"—children acting informally as community members (Percy-Smith & Thomas, 2010). Sotkasiira and colleagues (2010) maintain that child and youth participation is usually associated with educating children, with the assumption of participation enhancing their personal and social skills. This implies giving them useful resources for coping with their lives as members of society, consequently preventing social exclusion.

Different models have been created for understanding and improving the genuineness of children's participation and for making possible forms of participation visible to all the actors so that both adults and children can make informed choices concerning their degree of participation. The philosophy behind these models is that children's participation not only leads to better decisions in child-related issues (Ackerman et al., 2003), but is important and worthy in itself, as it creates possibilities for learning and development. Hart's (1992) "ladder of participation" is a well-known and often-cited model distinguishing between non-participation and participation and differentiating participation in terms of children's opportunity to affect the decisions: being just an informant or sharing decision-making with adults. Chawla (2001) presents another model with six forms of participation that are not necessarily mutually exclusive: children move between the forms of participation depending on their level of involvement and degree of personal initiative. In *prescribed* participation, the child feels a strong obligation to participate and considers it a privilege. In *assigned* participation, adults provide the opportunity to participate in an adult-led form, but participation itself is a meaningful situation for the child. In *invited* participation, the situation is adult-initiated and adult-led, but the child is provided

with the option of not taking part without feeling disadvantaged. In *negotiated* participation, the child cannot avoid participation, but is able to negotiate his/her role in it. *Self-initiated negotiated* participation is initiated and controlled by the child. In *graduated* participation, the child has opportunities to increase competence and assume new levels of responsibility according to his/her new skills. Finally, *collaborative* participation is a form of collective participation that is initiated, supported, and negotiated by a group. "Invited" participation is maybe often the closest situation in IDC research (cf. Druin, 2002).

These models do not, however, provide practical tools for projects to plan for the genuineness of children's participation beforehand or to evaluate it afterward. As the process of participation can be just as important as the outcome (Percy-Smith & Thomas, 2010), just measuring the results after the project is somewhat limited. Thus, different frameworks have been created for monitoring the project during its course and evaluating the impact of children's participation on the project (Sinclair, 2004; Johnson, 2010). Chawla and Heft (2002) present criteria developed particularly for project planning purposes to help take different facets of children's participation into account (Figure 1).

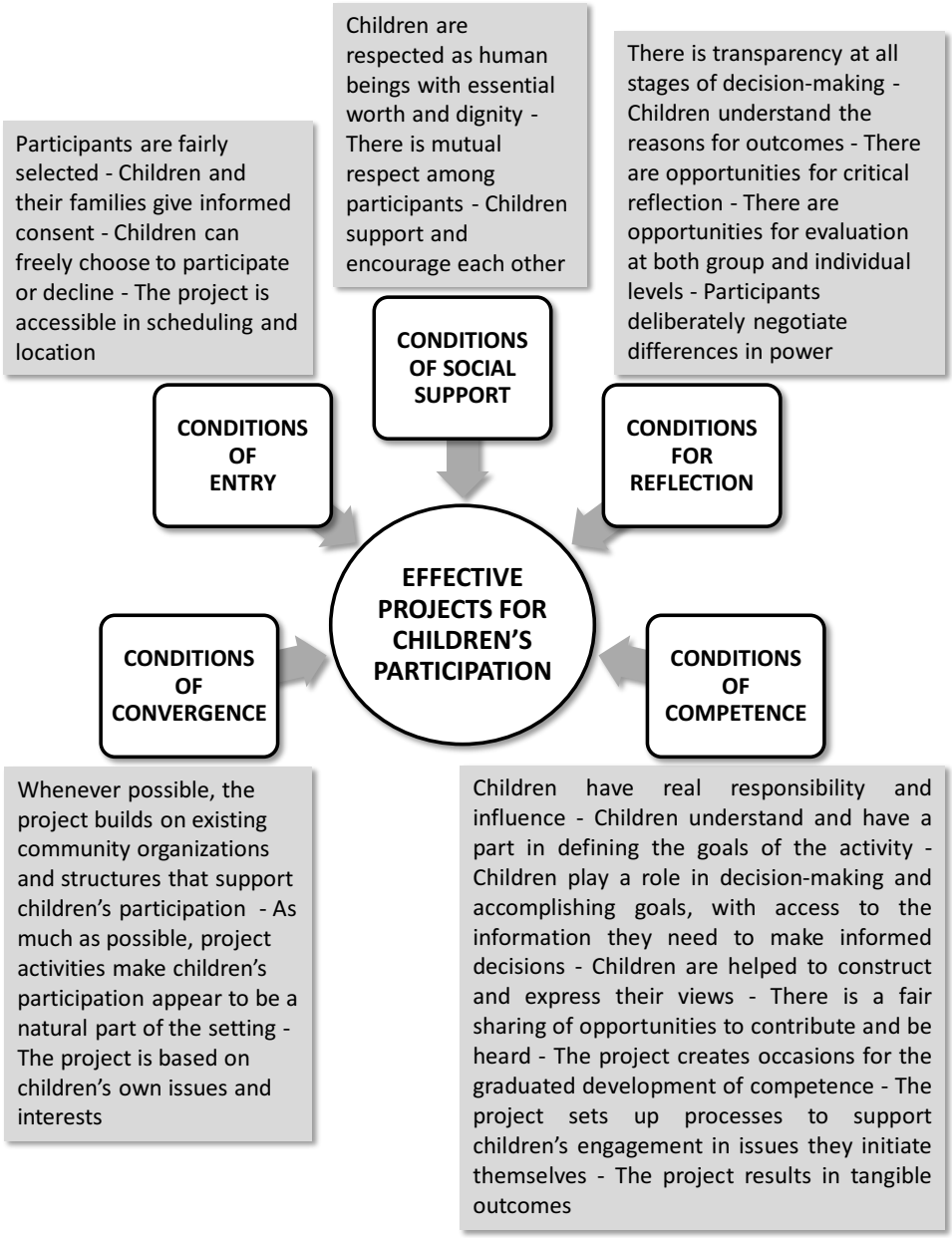


Figure 1. Characteristics of effective projects for children's participation (Chawla & Heft, 2002, p. 204)

We will utilize these criteria on children's genuine participation, defined by Chawla and Heft (2002), in making sense of the project we conducted on participatory design with children.

## 3 Foucauldian analysis of discourses

As mentioned, Foucauldian analyses have aroused interest in IS research in recent years, and some studies have already relied on the Foucauldian approach in examining how (power) relations between users and designers have been discursively constituted (Cooper & Bowers, 1995; Finken 2003, 2005; Hyysalo & Lehenkari, 2002; Markussen 1994, 1996). We apply this approach in the examination of how "children," their "participation," and the relations between the various design participants are

discursively constructed in an ICT design effort. Foucault himself was concerned with discourses on sexuality or madness and maintained that in discourses, there is always a group of objects that can be talked about, but also a group of objects that cannot be talked about. The analysis of discourses will never reveal the ultimate truth, but will reveal "certain ways of speaking." Even though Foucault was not solely interested in academic discourses, he also placed these under scrutiny, requesting that the ideological functioning of science should be critically examined (Foucault, 1972; Foucault, 1980).

Foucault called for archaeological examinations of specific domains of knowledge. Within such examination, one needs to acknowledge that while language is a system of possible statements—a finite body of rules that authorizes an infinite number of performances—the field of discursive events is always finite. The analyst should ask (in relation to all statements): How is it that this particular statement appeared rather than some other? What separates statements from what is not said? What is it that allows them to emerge to the exclusion of all others? Moreover, there are always other statements that a particular statement refers to (repeats, modifies, adapts, opposes) and statements whose possibility is defined by a particular statement. This interaction needs to be acknowledged. In the analysis, one should select all the statements addressing the topic. These are the elementary units of any discourse, and through these, the discourses can be placed under examination (Foucault, 1972).

However, it is also important not to view the statements as mere sentences, speech acts, or propositions, but as functions that have a role to play (Foucault, 1972). Foucault maintained that both knowledge and power are articulated in discourses. He acknowledged that knowledge is a form of power, but he was more concerned with the application and effectiveness of this power/knowledge (Hall, 1997). Hence, Foucault was especially concerned with the functions discourses exercise in people's lives. He emphasized that discourses find themselves in the hands of designated individuals, have certain functions to exercise in society, and impact practices that are external and non-discursive. Thus, the identity of any statement is defined by the domain in which it can be used or applied and by the role and function it performs there. In Foucauldian analysis, one tries to critically determine what positions can and must be occupied by individuals to be subjects in the discourse as well as the functions discourses exercise in people's lives. The analyst needs to ask: Who has the right to speak; the ability to understand; access to the statements; and the capacity to invest the discourse in decisions, institutions, and practices? (Foucault, 1972; Foucault, 1980).

In this paper, we direct our attention to an intervention we organized relating to ICT design with children. From the materials produced during the project, we will examine all the statements dealing with participatory design with children, taking into account that these statements exclude an infinite number of other statements as well as that there may be a series of other statements to which the examined statement refers to—part of these statements may be produced by academic researchers interested in the topic. We will show how the statements under scrutiny, sometimes among and in line with the academic texts on the matter, paint a particular picture of "children," "their participation," and the relations among the various design participants. The statements position the adult designers, the child participants, and the (power) relations among and between those groups in various ways. We show that some design participants have the right to speak and the capacity to invest the discourse in decisions and practices, but that this right and capacity are not equally distributed.

# 4 Research design

In this section, we first introduce our overall research strategy guiding the intervention, after which we describe our data gathering and analysis procedures in more detail. Our empirical work has long relied on the research strategy of nexus analysis (see, e.g., Halkola et al., 2014; Iivari et al., 2014; Kuure et al., 2010). Nexus analysis examines social action that is seen as mediated by a range of cultural tools or mediational means, including language (Scollon, 2001). Nexus analysis inquires how "the broad discourses of our social life are engaged (or not) in the moment-by-moment social actions of social actors in real time activity" (Scollon, 2001, p. 139). Nexus analysis views social action as a cross-section of three aspects: historical body (Nishida, 1958), interaction order (Goffman, 1971), and discourses in place (Scollon & Scollon, 2004). Historical body refers to our experiences and everyday practices influencing the social action in focus, while interaction order refers to social relationships and interaction influential in the focal social action. All social action is situated in real time and place, hence the focus on discourses in place (Scollon & Scollon, 2004). The research process involves the cycles of engaging, navigating, and changing the nexus of practice. The researcher first becomes attached to the community being researched (engaging); navigates for answers through different kinds of methods and data (e.g., discourse and interaction analysis); and, throughout this process, participates in the practices of the community being examined, contributing to its change (Scollon & Scollon, 2004). Nexus analysis involves looking at what is being done in the social action in focus and the ways the dimensions of interaction order, discourses in place, and historical body are intersecting in this action. We considered nexus analysis suitable for our research effort because it allows combining both qualitative and participatory research approaches as well as because it —due to its background in the study of language and interaction—allows for detailed examination of discourses (both the broad discourses of our social life and those taking place in a real time and place) (cf. Scollon & Scollon, 2004).

In this study, all three cycles of nexus analysis are evident. First, we gained access to and became acknowledged members within the community studied. The project under study was located in the setting of a Finnish comprehensive school (grades 1-6, ages 7-12). This school was one of the "Smart Schools" in the city, i.e., piloting the best practices in pedagogy and ICT use. We were already carrying out research on the formation and growth of the "Smart School" network in the city, and the headmaster of the school became interested in collaborating with us regarding participatory ICT design with children. Hence, a student project on the topic was formed. The project's steering group consisted of senior researchers representing four different disciplines and teachers from the school involved. The project team doing the actual work consisted of seven junior researchers who were university students on an advanced course of project studies. The focus of this study is on the project work that they conducted, in which they experimented with participatory design with school children. The work involved arranging two participatory design workshops for two groups of children—third-graders (aged 9-10 years) and fourth-graders (aged 10-11 years)—for a total of four workshops. The arrangement of the workshops in the school involved changing the nexus of practice in the sense that both the teachers and the pupils were invited to enter the world of ICT design. The cycle of navigating the nexus of practice, on the other hand, refers to our Foucauldian analysis of the research material gained. This data has also been examined from other perspectives, resulting in publications such as Halkola et al. (2014) and Kuure et al. (2010).

As regards our intervention in the school, in the two consecutive workshops organized for both of the age groups, the children were asked to design a user interface for a digital portfolio application, highlighting the fact that the product was to be used by the children themselves. The project team first introduced the central concepts related to the design, such as portfolio and interface. Simple examples were given to clarify their functionalities. The junior researchers provided assistance to the children and made observations during the activities. During the first round of workshops, the children carried out the design task individually: they made drawings of a digital portfolio they would like to use. The research team analyzed the results of the first round of workshops for both age groups, and the second round of workshops were based on those results. In the second round of workshops, the children worked in groups and took their ideas further. The research team had prepared some ready-made user interface elements to act as a basis for the design work, but the child groups were allowed to select a theme for their digital portfolio design. The designs the child groups created were thereafter collaboratively analyzed by the research team, with a focus on what seemed to be of interest for the children. This led to producing a specification for a digital portfolio into which numerous ideas from the children's creations were integrated. One of the junior researchers also wrote a master's thesis based on this work. Two of the junior researchers continued the work after the design workshops. After analyzing the project results, they implemented a functional prototype of the portfolio application. This application was tested with children, the same groups as in the design phase, in two sessions: first with a paper prototype, and later with the actual application prototype. The researchers had discussions with the children at the end of both phases. At the end of the second phase, the children also filled out a questionnaire. Two master's theses were written on this part of the project.

The senior researchers closely monitored and guided the whole project and took part in planning and decision-making during the project. In addition, they gathered some additional research material by interviewing the headmaster of the school. In the interview, they discussed issues related to the school piloting the best practices in pedagogy and ICT use. Moreover, one of the junior researchers was interviewed after the project concluded to clarify some issues in their documentation. We asked to interview all of the junior researchers, but only one was available at the time.

Altogether, the data archive of the study comprises 263 objects (e.g., Word, PowerPoint, Excel, or plain text documents or pictures) in the project workspace online (see Table 1). The data archive includes some documents related to project management (10), e.g., minutes and materials for the steering group. In preparing for research and participatory design with children, some background work was done to familiarize the research team with the methods and the children's world through web sources (4) and research articles (16). The team produced various drafts and documents on the initial steps (15), planning the data collection (13), and preparing materials for the participatory design workshops (10) as well as research ethics (7). Data documents and various meta-texts on data collection were, obviously, the largest group in the data archive, including research diaries (19) as well as pictures from the workshops (132). Finally, the data archive contains some documents related to synthesizing the findings for the final report (8) and master's theses that were produced as a result of the project (3). The research group also stored some reflections and notes (22) and produced a publication on participatory design within the project (1). Lastly, an interview transcript (1) of the interview of the headmaster is included here as well as the notes (1) from the interview of the junior researcher (the researcher did not want the interview to be recorded).

Table 1. The data archive of the study

| FIELD OF DATA | TYPE OF DATA SOURCE | NUMBER OF DOCUMENTS |
|---|---|---|
| PROJECT MANAGEMENT | Project documents | 10<br>Total 10 |
| PREPARATION FOR RESEARCH AND PARTICIPATORY DESIGN | Links to web sources<br>Papers and articles<br>Documents and drafts on initial steps<br>Documents and drafts on data collection<br>Materials for the PD workshops<br>Documents on informed consent and the register of personal data | 4<br>16<br>15<br>13<br>10<br>7<br>Total 65 |
| DATA COLLECTION FROM PD WORKSHOPS | Research diaries<br>Design pictures from the PD workshops | 19<br>132<br>Total 151 |
| RESULTS AND RELATED DOCUMENTS | Documents on findings<br>Documents by the senior researchers<br>Master's Theses on the project<br>Conference article on the PD workshops | 8<br>22<br>3<br>1<br>Total 35 |
| INTERVIEWS | Interview of the school headmaster<br>Interview of the junior researcher | 1<br>1<br>Total 2 |
| | | Σ 263 |

Three senior researchers with backgrounds in discourse studies or in IS, HCI, and IDC research carried out the analysis for this particular study (all were members in the project steering group). The navigation cycle of nexus analysis usually utilizes different kinds of discourse and interaction analysis methods in making sense of the data (Scollon & Scollon, 2004). In this particular research effort, we considered the Foucauldian approach to discourses as particularly appropriate. Although our work with children was carried out with the best intentions and closely followed the guidelines proposed by the IDC literature (e.g., Druin, 1999; Jensen & Skov, 2005; Guha et al., 2004), considering, for example, the teacher's role, the effect of power relations and school environment, children's previous knowledge of technology, and different working methods with children, we were unfortunately also aware of the imperfections of our implementation in many respects (see section five for empirical examples). Especially, this became evident after reading the literature calling for children's genuine participation. Hence, we wanted to critically reflect on the work done. Nexus analysis emphasizes approaches that examine discourse; however, as known, discourse analysis includes a multitude of connected approaches with diverging traditions (see, e.g., Fairclough 1989; Phillips & Hardy, 2002; Potter, 2004; van Dijk, 2001). We considered the critical variant to be crucial as the notion of children's genuine participation implies that power-related aspects must be taken seriously. Fairclough and Van Dijk are among the famous names within critical discourse analysis literature that both emphasize that discourses enact, confirm, legitimate, reproduce, and challenge existing power relations (Fairclough, 1989; van Dijk, 2001). Nevertheless, we considered the Foucauldian approach even more appropriate despite the lack of detailed guidance on discourse analysis on the micro level, as the Foucauldian approach resonated well with our self-acknowledgement of being deeply embedded

in this system and in a sense "prisoners of the prevailing discourses" (Hardy & Leiba-O'Sullivan, 1998: 462). In addition, our data analysis dealt with such a vast amount of data collected over a long time span (see Table 1) that we considered it impossible to carry out a detailed discourse analysis acknowledging aspects of vocabulary, grammar, and sentence structure in each document in detail (see, e.g., Fairclough, 1989). Instead, we wished to reveal to the reader a more general outline of how the broad discourses of our social life are engaged (or not) in the moment-by-moment social actions of participatory ICT design with children (cf. Scollon & Scollon, 2004). This kind of approach is well in line with the other Foucault-inspired analyses of discourses in the ICT design context (see, e.g., Cooper & Bowers, 1995; Finken, 2003, 2005; Hyysalo & Lehenkari, 2002; Markussen, 1994, 1996).

Our analysis began by going through the data archive described above. All the texts were carefully read, and instances of children's participation described were synthesized into one lengthy document. Afterwards, the data was categorized from the viewpoint of children's genuine participation, using Chawla and Heft's (2002) framework as a lens to reveal to us as well as to the reader both the successes and the failures in implementing children's genuine participation in our intervention. Subsequently, the focus turned to how the research team had constructed "children," their "participation," and the relations among the various design participants in their texts, along with other texts, e.g., academic texts, characterizing children's participation. From the material, we examined all the statements dealing with ICT design with children and how those, among and in line with the academic texts on the matter, painted a particular picture of the adult designers, the child participants, and the (power) relations among and between these groups. We considered what kinds of discourses were produced, what functions they exercised, and what positions can and must be occupied by individuals to be subjects in these discourses (Foucault, 1972).

# 5 Empirical insights

In the following section, our empirical findings concerning the ways of constructing "the children," their "participation," and overall, the relations among and between the various design participants are categorized according to Chawla and Heft's (2002) framework on children's participation (Figure 1).

## 5.1 Conditions of convergence

Chawla and Heft (2002) maintain that children's participation should rely on the existing community organizations and structures that support children's participation. Furthermore, children's participation should appear as a natural part of the setting. Their participation should also relate to their own issues and interests. These aspects are scrutinized next in terms of our project.

**The project builds on existing community organizations and structures that support children's participation.** The project was carried out in cooperation with a school into which access was negotiated by the multidisciplinary research team. School, of course, is a natural setting for children. This school was selected for our study because it was one of the "Smart Schools" in the city involved in projects experimenting with modern ICT in teaching and learning. Furthermore, the school had paid special attention to children's participation: children had been involved in renovating their school by providing their opinions on, e.g., architectural plans and by taking part in experimenting with novel ICT in teaching (see Figure 2, quotations [2a, 2b]).

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| **The project builds on existing community organizations and structures that support children's participation** | • *[2a] "When this plan for the future school classroom was being done with the architect's office for the upper concourse […] we had pupils with us and the completed plan was taken to them for comments; what they thought it looked like and what benefits it would have." (Interview, Headmaster of the School)*<br>• *[2b] "Children's participation in this phase has rather involved contents and projects, for instance when they have started doing something like the water project they were working on." (Interview, Headmaster of the School)"* |

Figure 2. Empirical examples

Therefore, in this case, children had already been positioned as participants in decision-making at school, at least in the participatory discourse of the headmaster of the school.

**Project activities make children's participation appear as a natural part of the setting.** Thus, in this school, children's participation in decision-making had already been initiated, and for this reason, one can argue that children's participation in a sense was already positioned as a natural part of the setting (e.g., children's participation portrayed as facts, as in the above examples). Furthermore, the sessions the research team organized took place in the children's familiar school setting. Therefore, one could assume that the sessions seemed natural for the children. The junior researchers in their texts also emphasized making the situation as natural for the children as possible to ensure that the children did not "feel too excited" (see [3a, 3b]). As the [3b] example illustrates, the researchers not only positioned this aspect as important, but also invited Allison Druin into this discourse to give legitimacy to this type of choice.

However, inspired by the existing IDC literature arguing for the participatory design partner model (see, e.g., Druin, 2002), the research team also placed emphasis on resisting the natural interaction dynamics of this setting, i.e., the teacher-led model of working that is customary in the school setting. Instead, they strongly advocated the ideal that children are to be considered as equal to adults in the design sessions and tried to communicate this to the children as well [3c, 3d, see also 16a and 16b].

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| **Project activities make children's participation appear to be a natural part of the setting** | • *[3a] "In the first idea workshops the children were sitting at desks in existing group formations so they didn't perhaps feel that excited being in the company of a familiar group." (Thesis, Researcher 1)*<br>• *[3b] "The classroom was chosen […] because in a familiar environment children feel more liberated and behave more openly (Druin, 1998)." (Thesis, Res. 2)*<br>• *[3c] "Teachers were also present in the first meeting , which possibly brought about negative effects as the meeting appeared perhaps more school-like although we didn't want the children to consider it a normal teaching event." (Thesis, Res. 2)*<br>• *[3d] "In the first idea workshop children were working in their own groups of desks and the research group was moving around, sitting in times with the children, trying to avoid a teacher-pupil setting. Informal clothing was another attempt to avoid authoritative positioning. The research group also introduced itself at the beginning as students who were doing school work." (Thesis, Res. 1)* |

Figure 3. Empirical examples

Thus, in the project, the researchers' texts emphasized making the situation very "natural" for children, but also resisting the existing interaction dynamics of the school setting, and in doing so, utilizing strong discourses on equality and participation in line with the extant IDC literature.

**The project is based on children's own issues and interests.** As mentioned above, the initial plans in the project were created among the multidisciplinary research team of senior researchers with an interest in experimenting with participatory ICT design with children; this planning took place without the children's involvement, and the senior researchers had the sole authority to determine the project goals and tasks. However, when the concrete activities with children were planned and executed, the research team did place emphasis on the children's own issues and interests (to a certain extent and within the limits of the already settled agenda). In the first round of workshops, the children were asked to design a user interface for a digital portfolio by themselves, letting them freely imagine a digital portfolio for their own use. In the second round of workshops, the adults had a more decisive role, but the children were still allowed to select a theme for the group work [4a, 4b]. The final outcome of all the design sessions, i.e., the specification for a digital portfolio, moreover, was to be heavily based on the children's ideas and issues, as indicated in the project documentation [4c].

In these texts, the importance of the children's own issues and ideas was indeed emphasized. However, sometimes, the researchers seemed to wish this was not so heavily the case, as those ideas and issues were not necessarily positioned as very beneficial or relevant for the digital portfolio design. This became apparent when examining the children's creations during the first round of workshops [4d, 4e] and when selecting the theme during the second round of workshops [4f].

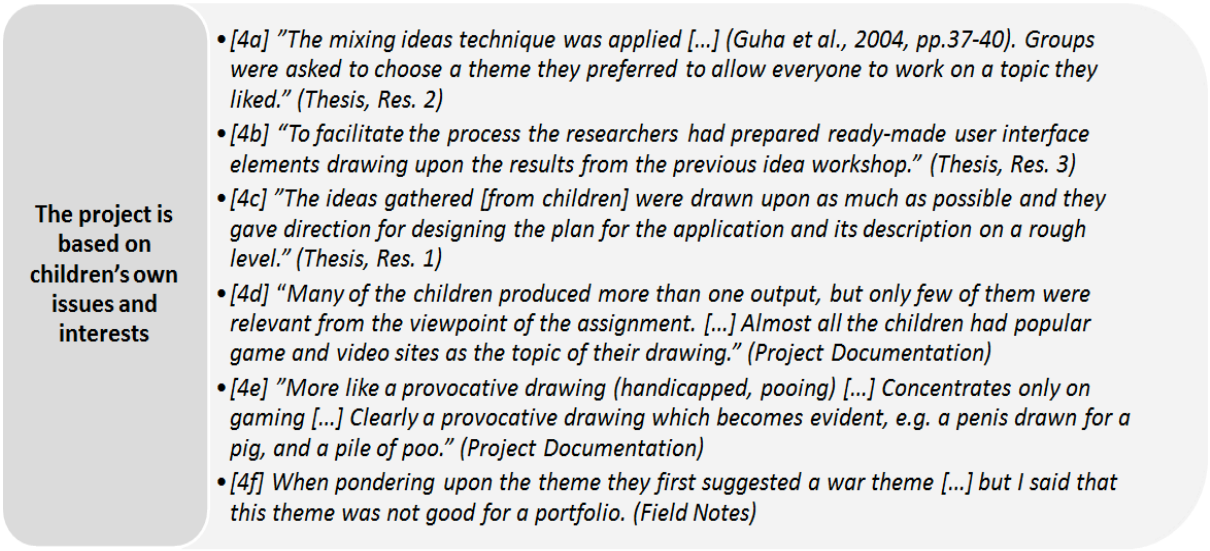


Figure 4. Empirical examples

Hence, although the children were placed in an important position in the design process, it was also recognized that children may be somewhat ignorant and in need of educating on what "a digital portfolio design" should entail. Otherwise, "handicapped and pooing animals" may dominate the designs as was the case in our data. Thus, from the researchers' side, one can identify a somewhat patronizing discourse describing the shocking creatures or unsuitable themes identified by the children. As regards the children, on the other hand, one can consider these themes and creations as implying a discourse of rebellion, the speakers within this discourse resisting the "obedient pupil"

position provided by adults and instead proposing something that is likely to create a terrified reaction in the adult instructors.

## 5.2 Conditions of entry

The framework on children's participation also maintains that focus should be placed on the conditions of entry in the sense that the participants should be fairly selected. Both children and their families should give informed consent, children should be able to freely choose whether they participate or not, and the project should be made accessible for children in terms of scheduling and location (Chawla & Heft, 2002). Next, our analysis concentrates on these aspects.

**Participants are fairly selected.** A "Smart School" was selected as the case school. A meeting was held and two participating classes for the research effort chosen based on their earlier involvement in experimenting with ICT and the teachers were willing to further engage in it. All the pupils in these classes were included, and all the rest were excluded (i.e., the other classes and the other schools in the city). Therefore, there is some ambiguity as to whether the selection could be labeled as "fair." An interesting observation, furthermore, relates to the research team's speculations after working with the children: whether they should actually have selected only the kinds of pupils who were "skilled," "willing," "not too gendered," or "having the ability to concentrate" [5a, 5b], therefore offering a conflicting view on the assumption that it is "fair" to "include all."

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| **Participants are fairly selected** | • *[5a] "The groups consisted mainly of few diligent pupils, but in every group there was also one or several pupils who did not have enough ability to concentrate or willingness for group work. These pupils required continuous and direct guidance to accomplish the task and despite that the visible results remained scarce." (Project Documentation)*<br>• *[5b] "Overall, the groups functioned well, but in some groups collaboration between boys and girls was not successful. In these cases the project group had to persuade the boys and girls to collaborate, but in spite of persuasion the girls and boys were rather working in their own groups. […] It would have been good to pay more attention to group formation, in some situations collaboration in mixed-gender groups was really weak. Creating the groups in advance, according to the teacher's recommendations, could help in making group work more efficient." (Project Documentation)* |

Figure 5. Empirical examples

Thus, it can be argued that the adults in this case produced a discourse of segregation in their texts that categorized children into "suitable" (diligent) and "unsuitable" ("without the ability to concentrate," "not group-work-skilled or willing," or "too gendered").

**Children and their families give informed consent.** The research team considered informed consent from the parents of the pupils as essential in the project: it was requested at the beginning of the project and abundant documentation on it—relating to local legislation and its challenges in this case—can be found. However, informed consent from the participating children was not discussed in the project documentation at all. It would have necessitated careful informing of the children for becoming truly capable of making an *informed* decision. It seems that in this case the parents and teachers of the pupils were considered as the decision-makers on this matter. One can say that informed consent from the children was not positioned as an issue and that the children remained ignored in this respect. Instead, they were here dominated by the involved adults.

**Children can freely choose to participate or decline**. A related issue is that the children could not freely choose to participate in the project activities. As this work was done in the school context as part of their schoolwork, it was not considered necessary to offer the children the option of not taking part—their teachers had already selected these activities as part of their schoolwork and viewed them as useful for the children's learning. On the other hand, as mentioned, the research team had also noticed that some children were not as "suitable" as others. The research team placed emphasis on engaging all, but some children were not willing to take part in the work, which was also allowed [6a, 6b, 6c, 6d].

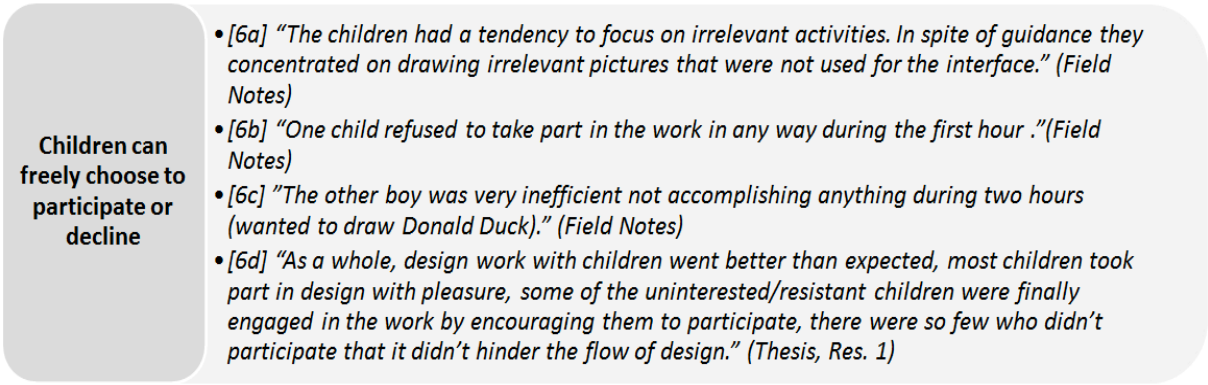


Figure 6. Empirical examples

Again, in these texts, the discourse of segregation emerges: there is a group of "suitable" children identified to take part in the design activity as well as groups of "unsuitable" children identified who are focused on irrelevant issues, uninterested, or resistant. These texts also imply the existence of a discourse of domination on the adults' part: the adults seem to see it as their right and duty to exercise some sort of power over the children—albeit they did not force children to participate, they "guided" [6a] and "encouraged" [6d] them.

**The project is accessible in scheduling and location.** As mentioned, the project took place in the pupils' school during their school day; this aspect was indeed acknowledged.

## 5.3 Conditions of social support

The framework on children's participation also maintains that in projects involving children, it is central to respect children as human beings with essential worth and dignity. Mutual respect among the participants is crucial. Children should also support and encourage each other during the project (Chawla & Heft, 2002). These issues will be scrutinized next in the case project.

**Children are respected as human beings with essential worth and dignity**. In the project, there was a strong will to include children in the ICT design process. As mentioned, the researchers familiarized themselves with certain legal and research-ethics-related material to prepare themselves for the work. In their documentation, human dignity and the research subjects' autonomy, well-being, and privacy were emphasized [7a]. The researchers also relied on existing IDC literature arguing for children's participation. It was specifically emphasized that children need to be considered equal to researchers; the restrictive teacher-led way of working in the school context was to be avoided. Druin and her colleagues (2002) also back this up [7b].

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| **Children are respected as human beings with essential worth and dignity** | • *[7a] "To maintain the integrity of the research subjects, norms have been created for expressing human dignity. With their help the aim is to respect the autonomy of those researched, their mental well-being, and privacy." (Project Documentation)*<br>• *[7b] "Children's role as design partners and various methods for group work (Druin, 2002, Guha et al., 2005, Guha et al., 2004) were drawn upon [...] we aimed at [encouraging] the children and researchers to work together as equal design partners." (Thesis, Res. 2)* |

Figure 7. Empirical examples

The project documentation does not address this issue in any more depth; however, strong respect for child design partners characterizes all the texts produced in the project, and strong discourses of participation and equality, in line with the IDC literature on children's participation, were prominent in the project documentation.

**There is mutual respect among participants**. In a similar vein, the researchers emphasized a good working atmosphere and equality related to the relationship between themselves and the children [8a].

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| **There is mutual respect among participants** | • *[8a] "The children took researchers as members in their own group [...] tasks were distributed evenly. [...] Children clearly enjoyed such an interactive atmosphere." (Thesis, Res. 2)* |

Figure 8. Empirical examples

The children also seemed mostly to work well and willingly together. However, some problems were reported among the child participants that will be scrutinized next.

**Children support and encourage each other.** The researchers reported that although some design teams worked well [9a, 9b], this did not apply in all cases [9c, 9d, 9e].

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| **Children support and encourage each other** | • *[9a] "Group work got started well. Somebody drew the main window, which the others were able to comment upon." (Field Notes)*<br>• *[9b] "The pupils were working together and discussed what to do next, the group functioned well and the pupils even encouraged each other." (Field Notes)*<br>• *[9c] "The boys (2) had difficulties in getting the work going with the girls (3) and they were actually begging all the time for permission to work on their own." (Field Notes)*<br>• *[9d] "One child had good ideas and some mature vision of interface design but almost without exception the other group members disagreed, so the views of this child did not end up in the design. The group followed strict democracy and there was a vote on every decision. Some extremely feasible ideas were not used exactly for this reason." (Field Notes)*<br>• *[9e] "The only girl in the group was left out of the cooperation." (Field Notes)* |

Figure 9. Empirical examples

It seemed that on some occasions, teasing took place disguised as democracy [9d]. The researchers did not react to this, but still somewhat anxiously reported it in their texts. Additionally, some girls were reported as remaining outsiders during the activity [9e]. It seems that some children can be considered as silent or silenced in the design activity even though they were present in the group work situation.

These texts indicate that both the adults and the children produced the discourse of segregation, categorizing children into "suitable" and "unsuitable" regarding the group work situation. The discourse of domination can also be connected with children. As mentioned, the teasing taking place disguised in the form of democracy can be considered as a situation in which some children exercised power to settle what to include in the design solution and effectively silenced some other children. This seemed to be the interpretation of the researchers crafting the field notes of the situation.

## 5.4 Conditions for competence

Chawla and Heft (2002) recommend that children should have real responsibility and influence and that they should also understand and take part in defining the goals of the activity in question. Moreover, they should take part in decision-making and in achieving the goals, having access to information they need for informed decisions. Children should also be helped to construct and express their views and emphasis should be placed on the fair sharing of opportunities to contribute and to be heard. Additionally, the project should create possibilities for the gradual development of competence and set up processes that support children to take part in issues they initiate. Finally, the project should also produce tangible outcomes (Chawla & Heft, 2002). These aspects will be examined next.

**Children have real responsibility and influence**. In this project, it was considered essential that the children's participation actually influenced the digital portfolio specification created. The researchers reported on how the children's ideas were carefully analyzed and further refined during the second round of workshops, the resulting specification trying to utilize these as much as possible [10a]. The children were also given the opportunity to influence the design during the paper and functional prototype evaluation [10b, 10c]. Some children also seemed to know that their work had an influence, and they were described as eager and excited about this knowledge [10d], although some children were also reported as having already forgotten the earlier work they had done [10e].

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| **Children have real responsibility and influence** | • *[10a] "Ideating started by analysing all the interface designs the children had produced. Every product was dealt with and commented upon and a detailed description of the functionalities was created. The location of every interface object and possible functionality was described in detail. In addition, layout, colours, general appearance, theme and possible soundscape were described. […] An information character was portrayed in most of the pupils' interface designs so the decision was to include it in the application; the character has a clear purpose as a directive object. The game arena was designed to be part of the application because in the user interface designs produced by the children different games played an important role […] The purpose of the calendar reminding about different events […] The calendar was one of the many user interfaces designed by the children." (Project Documentation)*<br>• *[10b] "In the prototyping situation children were given certain tasks and on the basis of their success and through interviews it was decided if the function remained in the final prototype or if it was to be changed somehow. After paper prototyping children were also presented open questions, which helped researchers in drawing conclusions on the features important in the application." (Thesis, Res. 3)*<br>• *[10c] "Gamers aim at reaching new levels as well as growing their own strengths and developing the outlooks of the character. Together with the children, we pondered upon combining such an idea with the portfolio." (Thesis, Res. 2)*<br>• *[10d] "When children came in for testing […] they were clearly excited and curious because a great deal of the features of the environment and views originated from their designs and ideas." (Thesis, Res. 2)*<br>• *[10e] "A little over two months had passed from the previous meeting and all the children did not necessarily seem to remember us any more or what we had been doing together. […] Children's conception of time, which deviates strongly from that of the adults', is a fact that is never highlighted enough. For example an event a month earlier may be totally forgotten or at least the causal connection between the two events may be impossible to see. This became evident when the intervals between group meetings were quite long, and it should have been considered much more in the beginning." (Thesis, Res. 3)* |

Figure 10. Empirical examples

Thus, the children clearly were positioned as influential in the digital portfolio design, but they were not considered as needing to have any real responsibility in the project, which was solely in the hands of the adult researchers. The children were merely expected to produce some designs and to take part in the evaluation sessions as part of their schoolwork, i.e., to act as informants, testers, and design partners in line with participatory IDC discourse on children and ICT design (e.g., Druin, 2002), but not as decision-makers having real responsibility and influence.

**Children understand and have a part in defining the goals of the activity.** As has become evident, it was not considered necessary to thoroughly inform the children of the project goals (see section 5.2) nor to allow the children to take part in defining these goals (see above). However, the researchers placed special emphasis on making the actual design activities as understandable as possible for the children: the team carefully considered how to present the task assignments and concepts to them [11a, 11b]. Yet, this task proved to be quite challenging, as the children seemed to have difficulties in understanding what was expected from them [11c, 11d, 11e].

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| **Children understand and have a part in defining the goals of the activity** | • *[11a] "Although children may be very familiar with technology, most of them do not know related terminology. The concepts are very abstract and difficult even for most adults. […] At the beginning of both workshops the children were presented technology-related terminology through various examples. The examples aimed at concretizing things to be encountered during design. Beside the presentation of terminology, the project group chatted with the children about other issues; hence the presentation served as a kind of topic-related introductory discussion. Chatty discussion together with children relaxes the atmosphere before the task and helps children enjoy themselves (Hanna et al. 1997)." (Project Documentation)*<br>• *[11b] "The main idea of the introduction was to familiarize the children with the topics and concepts. […] The lesson was started by raising the children's interest with a technology related song, after which the implementation of the workshop started. Terminology was first repeated with a ready-made example created with PowerPoint and the idea of the workshop was presented. The example illustrated simple push-buttons, which had been placed in the user interface here and there randomly to prevent the example from being copied to the children's work." (Project Documentation)*<br>• *[11c] "All the children understood the user interface to be a web browser because of the given example, leading to similar kind of results. The products on web browsers were partly due to the teacher giving guidance to the pupils in a slightly different manner in comparison to the project group (the teacher said that "there has to be an address bar in the product"). The project group tried to correct this but the damage had already been done." (Field Notes)*<br>• *[11d] "The other half of the third graders had difficulties in internalizing the term user interface that had been introduced. Therefore one of the project group members clarified the term by drawing a simple example on a giraffe on the blackboard and introduced how the animal itself could function as a user interface element (by clicking the giraffe's eye you can move to the next page and so on). This is why in some designs there were fully identical copies of the giraffe example, which again illustrates how children are sensitive to external influences." (Field Notes)*<br>• *[11e] "Some of the children had not even by now fully understood all the terms and the task assignment; hence the project group had to direct the progress of the work quite much. Usually there were only a couple of pupils in the group who clearly understood user interface navigation and the concept of portfolio." (Project Documentation)* |

Figure 11. Empirical examples

Thus, in defining the project goals, the children remained totally ignored, while special effort was placed on making them understand the adult-defined goals. However, the children were considered "ignorant" and in need of serious education on these matters. While describing the numerous comprehension-related challenges, the researchers can again be argued as utilizing the discourse of patronization: they discussed the challenges involved with the primitive, exotic, uncultivated "other" that was in need of serious civilization before productive ICT design sessions could take place.

**Children play a role in decision-making and accomplishing goals and have access to the information they need to make informed decisions.** As has become evident, the children were positioned as informants, testers, and design partners (Druin, 2002) in accomplishing the project goals. Although a lot of emphasis was placed on explaining the project goals for the children, the children were not positioned as decision-makers—allowed to make informed decisions—but instead, the adult researchers alone were allowed that position, even though the adult designers emphasized the children's ideas, trying to take them into account in the specification. It was reported that the children were allowed to select a theme for their group work; however, even in this situation, the adults reported "guiding," "monitoring," and "steering" the work [12a, 12b, 12c]. Even the researchers themselves pondered on whether the children had any real influence on the outcome [12d].

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| **Children play a role in decision-making and accomplishing goals, with access to the information they need to make informed decisions** | • *[12a] "The members tried to avoid guiding children […] but were helping creative ideation […] if it seemed that the design process in the group was too slow." (Thesis, Res. 2)*<br>• *[12b] "During the work the project group members monitored the work of each half of the class and helped the children if needed. Although the project members tried not to guide the children and their views, children were nevertheless given guidance for the progress of the task. The group also monitored individual accomplishments because we did not want one idea to multiply in several designs due to copying." (Project Documentation)*<br>• *[12c] "After the initial brainstorming pupils ended up with an imaginative beach theme. They were however steered to the school world and the portfolio." (Field Notes)*<br>• *[12d] "An issue worth consideration is how much children in the end affect the design or whether it is after all adults who finally make the important decisions. […] One can consider to what extent children's ideas were finally drawn upon in design. Were the solutions based purely on the ideas or was the decisive factor after all what was the easiest to put into practice from the point of view of programming and what was quickest to complete." (Thesis, Res. 3)* |

Figure 12. Empirical examples

Thus, the children were far away from the decision-maker position, as they were "helped," "guided," and "steered" toward an adult-decided direction while accomplishing the project goals. Adults were the sole group of actors capable of making decisions—not to mention *informed* decisions. Hence, the discourses of domination and patronization can again be identified from the texts, in which the adults considered it as their right and duty to steer the children in an "appropriate" direction.

**Children are helped to construct and express their views.** On the other hand, this aspect was emphasized in the project, and the existing IDC literature strongly inspired the researchers toward certain kinds of activities with the children [13a]. The existing literature directed the researchers to include activities such as drawing, doing arts and crafts, group work, play, and singing that were considered suitable, engaging, and inspiring for the children, increasing their creativity and making the atmosphere relaxed and comfortable [13b, 13c, 13d].

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| **Children are helped to construct and express their views** | • *[13a] "Druin's (1999) participatory design involves the design phase, activities with children, and the analysis of the products. The two first phases of the "Cooperative Inquiry" method were used […] In the first idea workshop work was done by following the "Mixing ideas" method by Guha et al. (2004), for example." (Thesis, Res. 1)*<br>• *[13b] "Discussion with children makes the atmosphere relaxed before the task to be accomplished and makes children enjoy themselves. (Hanna, Risden & Alexander 1997). […] The event was started by a singsong in which concepts were repeated; this made the atmosphere free and the children seemed to be more active in answering than in the previous idea workshop." (Thesis, Res. 1)*<br>• *[13c] "Ready-made user interface elements made it clearly easier for children to understand what the portfolio was and the groups got started with this help. Without them group work would certainly have been quite difficult because internalizing of the concepts of portfolio and user interface was still fairly weak." (Project Documentation)*<br>• *[13d] "Teacher, knowing the pupils well, helped in group division […] to avoid putting in the same group children getting along poorly […] Another important factor contributing to creative work was dividing the class in two parts. [This] calmed down […] especially the wildest pupils." (Thesis, Res. 2)* |

Figure 13. Empirical examples

The prototypes, furthermore, can be considered as traditional PD tools that enable children to construct and express their views of the forthcoming ICT. In these sessions, the researchers also considered multiple issues that would help the children to offer their feedback and insights [14a, 14b].

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| **Children are helped to construct and express their views** | • *[14a] "Paper prototyping was planned to be accomplished in pairs [...] The teachers were asked to choose pairs who get along well. This aimed at improving discussion because children often have difficulties in verbalizing their thoughts and they may even feel it is uncomfortable. (Höysniemi, 2005, s.271)." (Thesis, Res. 2)*<br>• *[14b] "After testing there was discussion [...] after which the children filled in a short questionnaire [...] This is how personal answers were reached for even if they had used [the prototype] in groups." (Thesis, Res. 2)* |

Figure 14. Empirical examples

However, as is evident, for some children, other measures would also have been needed, as many kinds of problems were reported, e.g., [15a, 15b, 15c, 15d].

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| **Children are helped to construct and express their views** | • *[15a] "One of the group members refused to take part in the work in any way during the first lesson. (S)he started working not until the second lesson started, when (s)he was allowed alone to design a pleasing view that was MSN (not relevant view for the work but it was the only thing (s)he wanted to do." (Field Notes)*<br>• *[15b] "In some groups collaboration between boys and girls did not work out." (Project Documentation)*<br>• *[15c] "In the boys-only group there was also disturbing behaviour. This may have been because of their age but also because of the mutual relationships in the group. [...] In one mixed group the only girl in the group was always left slightly outside the activity, the loud boys drawing all the attention." (Thesis, Res. 1)*<br>• *[15d] "There were 5 boys in the group, two of them were more quiet, the rest of them clearly more dominating. [...] An essential observation was that the children were interested in small details, although they were not relevant from the viewpoint of the big picture. This became the biggest challenge for the group work, in addition to democratic activity (and sometimes intentionally voting against someone)." (Field Notes)* |

Figure 15. Empirical examples

All in all, the research team positioned the children as playful, active, and creative designers, but also as potentially ignorant, shy, nervous, quiet, noisy, wild, too detail-oriented, too gendered, dominating, or not having group work skills, interest, or the ability to concentrate. Thus, adults were needed to guide the work. The adults were positioned as essential in helping the children to construct and express their views: the adults were to steer the design sessions and to encourage and support the children when need be (e.g., some of the girls and the more quiet children and the ones not willing/interested in/having group work skills). Here again, the segregation of the children into suitable and unsuitable takes place; further, the dominant position of the adults in the overall design discourse is accentuated.

**There is a fair sharing of opportunities to contribute and be heard.** All in all, in this project, it was considered essential that the children were invited to contribute during the design and evaluation sessions, and the children were offered opportunities to do this. The research team also seriously tried to integrate the children's ideas into their design. The children, as mentioned previously, were not placed into the position of decision-makers; however, they still were positioned as informants, testers, and design partners in accomplishing the goals. A lot of emphasis was placed on helping children to

construct and express their views as well as on explaining the project goals to them. As seen in the discussions above, the child groups were mostly considered as working well together and encouraging each other; however, in some groups, it seemed that teasing took place. It was also reported that in some groups, girls or quiet children were silent or silenced. The adults were also in some occasions reported to be strongly steering the sessions in the direction they considered appropriate. Hence, the discourse of domination can be associated both with the descriptions of adult and child behavior. Some of the children and adults had seemingly grasped the authority in some of the design situations, silencing other participants.

**The project creates occasions for the graduated development of competence**. This was an aspect that was not explicitly considered in the project at all. However, a lot of effort was placed on explaining related terminology for the children; further, practical experience on ICT design and evaluation was offered to them, due to which one can say that there may have been some development of competence taking place, albeit without any explicit effort or intention.

**The project sets up processes to support children's engagement in issues they initiate themselves.** This is another aspect that remained neglected in the project. The children were pupils in a school that had already emphasized their participation in various kinds of issues and decisions at school. However, this project did not specifically build on that nor did it try to develop that aspect further.

**The project results in tangible outcomes.** In this case, the result was the digital portfolio specification and a functional prototype built from it. However, the teachers wanted something more concrete and useful to come out of the effort. They even wished for a working application to be delivered, but it was not possible for such a university student project to accomplish. Related to the tangible outcome, however, when the children encountered the prototype, a tangible outcome of some sort, some were aware of having an influence on it and were eager and excited because of this awareness (see [10d]).

## 5.5 Conditions for reflection

Finally, Chawla and Heft's (2002) framework suggests that related to children's participation, there should be transparency in decision-making and that the children should understand the reasons for the outcomes. There also should be opportunities for critical reflection, for evaluation at the group and individual level, and deliberate negotiation of differences in power among the participants (Chawla & Heft, 2002). These issues will now be discussed as they pertain to our case project.

**There is transparency at all stages of decision-making**. In this project, an assumption was that the design decisions were to be heavily influenced by the children's ideas, but this was not made transparent to the children. The children were positioned as design partners and later allowed to evaluate the prototype that was built—some seemingly knew that they had influenced it [10d], but no further information about the process was offered for the participating children and some of the children did not even seem to remember the previous sessions that the researchers had organized [10e].

**Children understand the reasons for outcomes.** This issue connects with the previous one (see above).

**There are opportunities for critical reflection**. Evaluation of the digital portfolio design was considered important, but the project did not consider critical reflection opportunities as necessary for the participating children in any other sense.

**There are opportunities for evaluation at both the group and individual level.** Again, evaluation of the digital portfolio design was placed into an important role, but no other evaluation was considered at the group or individual level.

**Participants deliberately negotiate differences in power.** As already evident, the researchers paid attention to this: children were positioned as "equal" to the researchers. The researchers tried to communicate this to the children as well [16a, 16b, see also 3d] by clearly relying on the discourse of participation and equality (identified from the academic literature on the matter).


Figure 16. Empirical examples

On the other hand, as mentioned, the researchers also admitted steering the children in a certain direction, and therefore not totally relying on the equal design partner model. They did not position the children as decision-makers, and no negotiation on the matter even took place. The adults grasped the authority to make the design decisions, and they also steered the sessions in a more "appropriate" direction behind the scenes. Hence, the discourses of domination and patronization picture these texts.

# 6 Concluding discussion

In this section, the main empirical results are summarized and their implications are discussed.

## 6.1 Summary of the results

We asked in the current study how genuine the children's participation was in our project and how children, their participation, and the relations between the various design participants were discursively constructed in our project. Based on the empirical analysis relying on the framework by Chawla and Heft (2002), we can conclude that we truly invited children as participants into the ICT design process with the best intentions, but the children's participation clearly was not genuine in all respects. Especially the following issues remained neglected: it was considered important to ask for informed consent from children's guardians, but informed consent from the children was not; the children were not entirely free to choose to participate or decline; not all children supported and encouraged each other; the children were not allowed real responsibility, the power of decision-making, or the ability to define the goals of the activity; not all of the children had an opportunity to contribute and to be heard; the children's graduated development of competence was not considered nor the tangible outcomes of the project, and support for the children's future engagement in issues they initiate themselves remained ignored in the project; and finally, the project was limited as regards

transparency in decision-making and support for critical reflection and evaluation at the individual and group level.

Based on our empirical analysis inspired by the Foucauldian lens, we were also able to identify numerous ways in which "children" had been discursively constructed in the texts characterizing our ICT design effort. These are summarized in Table 2.

| **Criterion for genuine participation:** | **Children positioned as:** |
|---|---|
| **Conditions of convergence** | |
| Whenever possible, the project builds on existing community organizations and structures that support children's participation. | **Appreciated as equal partners.** Children as appreciated participants in decision-making at school. |
| As much as possible, project activities make children's participation appear to be a natural part of the setting. | **Appreciated as equal partners.** Children as equal to researchers should not remain in the traditional position as subordinates to teachers. |
| The project is based on the children's own issues and interests. | **Appreciated as equal partners. Ignorant: to be educated.** Child-informed/inspired designs and activities, but also, the child-inspired designs encountered caused researchers to deem them as "ignorant children" to be educated. |
| **Conditions of entry** | |
| Participants are fairly selected. | **"Suitable" desired, "unsuitable" identified.** Diligent children preferred. Also, children "without the ability to concentrate," "not group work skilled or willing" or "too gendered" were identified. |
| Children and their families give informed consent. | **Ignored.** Guardian-led/focused process, not child-led/focused. |
| Children can freely choose to participate or decline. | **Ignored. "Suitable" desired, unsuitable identified.** Some children were allowed to do their own thing. Others were identified as "interested in irrelevant issues," "uninterested," or "resistant." |
| The project is accessible in scheduling and location. | |
| **Conditions of social support** | |
| Children are respected as human beings with essential worth and dignity. | **Appreciated as equal partners.** Children as equal to researchers should not remain in the traditional position as subordinates to teachers. All children considered as valuable participants. |
| There is mutual respect among participants. | **Appreciated as equal partners.** Children as equal to researchers should not remain in the traditional position as subordinates to teachers. |
| Children support and encourage each other. | **"Suitable" desired, unsuitable identified. Silent. Silencing each other.** Some children teased others; teasing disguised as democracy. Some children left out/remained outside. |
| **Conditions for competence** | |
| Children have real responsibility and influence. | **Influential. Ignored.** Children had no real responsibility. Children had influence as informants, testers, and design partners, but they |

| | |
|---|---|
| | did not act as decision-makers (these were solely the adults). |
| Children understand and have a part in defining the goals of the activity. | **Ignored. Ignorant: to be educated.** Children did not take part in defining the goals. "Ignorant children" were educated. |
| Children play a role in decision-making and accomplishing goals and have access to the information they need to make informed decisions. | **Influential. Ignored. Ignorant: to be educated.** Children acted as informants, testers, and design partners, but they did not act as decision-makers (these were solely the adults). "Ignorant children" were educated. |
| Children are helped to construct and express their views. | **Influential. Ignorant: to be educated. "Suitable" desired, unsuitable identified. Silent.** Children acted as informants, testers, and design partners. Children as playful, active, and creative designers, but also potentially ignorant, shy, nervous, quiet, noisy, wild, too gendered, too detail-oriented, dominating, or without group work skills, interest in the project or the ability to concentrate. |
| There is a fair sharing of opportunities to contribute and be heard. | **Influential. Ignored. Ignorant: to be educated. "Suitable" desired, unsuitable identified. Silent. Silencing each other.** Children acted as informants, testers, and design partners, but they did not act as decision-makers (these were solely the adults). Children as playful, active, and creative designers, but also potentially ignorant, shy, nervous, quiet, noisy, wild, too gendered, too detail-oriented, dominating, or without group work skills, interest in the project or the ability to concentrate. Some children teased others; teasing disguised as democracy. Some children left out/remained outside. |
| The project creates occasions for the graduated development of competence. | **Ignored. Ignorant: to be educated.** Ignorant children were educated. |
| The project sets up processes to support children's engagement in issues they initiate themselves. | **Ignored.** Not considered. |
| The project results in tangible outcomes. | **Ignored. Influential.** Children had influence as informants, testers, and design partners |
| **Conditions for reflection** | |
| There is transparency at all stages of decision-making. | **Influential. Ignored.** Children acted as informants, testers, and design partners, but they did not act as decision-makers (these were solely the adults in this case). |
| Children understand the reasons for outcomes. | **Influential. Ignored.** Children acted as informants, testers, and design partners, but they did not act as decision-makers (these were solely the adults in this case). |
| There are opportunities for critical reflection. | **Ignored.** Not considered. |
| There are opportunities for evaluation at both the group and individual level. | **Ignored.** Not considered. |
| Participants deliberately negotiate differences in power. | **Appreciated as equal partners. Ignored.** Children as equal to researchers should not remain in the traditional position of subordinate to teachers, but children did not act as decision-makers. In this case, no negotiation even took place. |

Table 2. The discursive construction of "children" in the empirical data

All in all, our results reveal that in our participatory project with children, the children indeed were placed into an important position, resulting from our strong reliance on the extant IDC literature (e.g., Druin, 1999; Guha et al., 2004) and embracing the discourses of participation and equality (Figure 17). The researchers invited the children as equal participants into the design process and tried to resist the teacher-dominant way of working in the school context. The design activities and outcomes were to be child-led, or at the very least, child-inspired. The researchers utilized an empathetic discourse constructing the children as valuable, even equal, participants in ICT design, together with the extant IDC literature on the matter. However, some cracks in the picture also emerged.

Although considered valuable and creative participants, children were also positioned in the texts produced in the project as somewhat "problematic," i.e., as shy, nervous, quiet, noisy, wild, too gendered, too detail-oriented, dominating, resistant, not group work skilled or willing, not interested in the project, or without the ability to concentrate. The children were encountered as ignorant—in need of serious education on matters relating to design and ICT. Further, too "child-inspired" creations were encountered, i.e., the drawings of "pooing, handicapped animals." The texts continuously produced and reproduced a segregation of children into "suitable" and "unsuitable." The research team wished they could continue the work with the "suitable ones," but the project setup forced them to include everyone. Despite this, some children were still ignored, either because of their own will or because of the children silencing each other. The researchers were unable to help some children to join in the design activity (i.e., some of the quiet children and the girls).

Thus, there were numerous indications of power struggles and domination among the design participants in the research material. The power struggles and domination emerged in several senses: the adults reported silencing, ignoring, and steering the children; some of the children silenced, ignored, and steered each other, along with rebelling against the adults. As regards children's participation in ICT design, therefore, not only the discourses of participation and equality were identifiable, but also the discourses of segregation, patronization, domination, and rebellion (Figure 17). On the adults' side, the children were categorized into suitable or unsuitable, and the ignorant or otherwise problematic children were "steered," "guided," or "educated." Interestingly, the discourses of domination and segregation could also be connected with the description of some children, as it was reported that some children hindered others' opportunities to participate or were reluctant to work with some other children. As regards some children, moreover, the discourse of rebellion can also be identified in connection with some of the descriptions of the "unsuitable" children and their "inappropriate" ideas—in this case, the children seemingly resisting an obedient pupil position while crafting their digital portfolio designs.

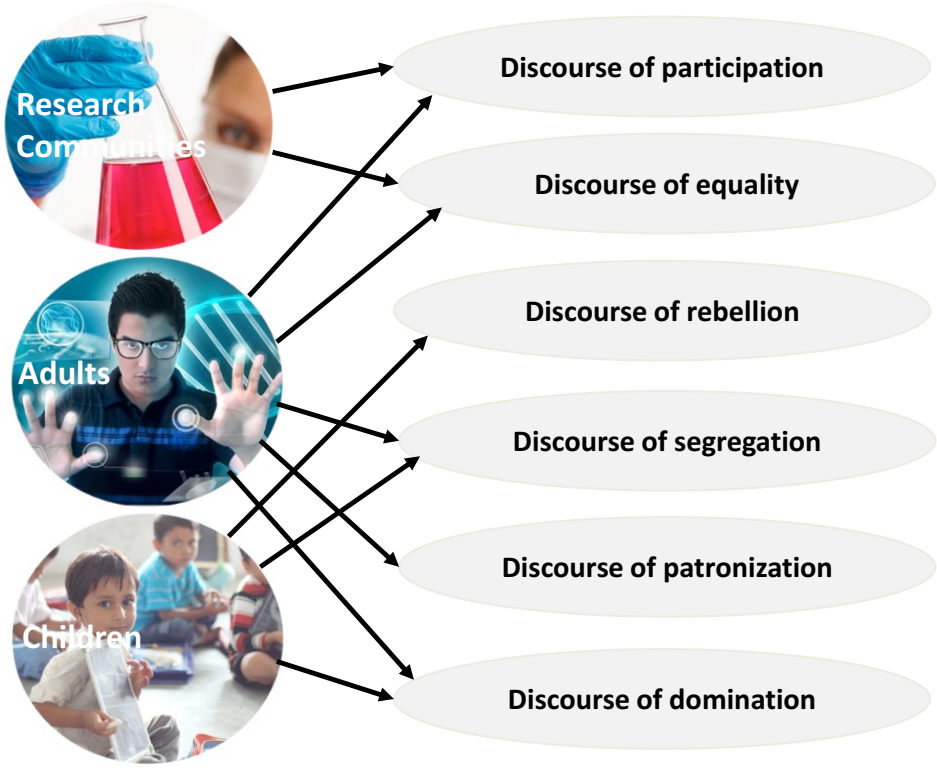


Figure 17. The discursive construction of children's participation in the empirical data

Next, we will discuss the implications of these findings for IDC and critical IS research.

## 6.2 Implications of the Foucauldian lens

The Foucauldian approach enabled us to take a critical look at a participatory project with children. Following Foucault, we were able to also consider the dark side of participation, the difficult issues, and potential power struggles. To begin with, we were aware of us, the researchers, being deeply embedded in the same system we were examining, i.e., "prisoners of the prevailing discourses" (Hardy & Leiba-O'Sullivan, 1998: 462). We acknowledged that discourses find themselves in the hands of designated individuals (us, adults, IS, PD, HCI, IDC researchers) and also have certain functions to exercise. We acknowledged that taking part in these discourses positions both the speaker and listener in a certain way, and we looked at these positionings especially in regards to the children involved.

In the end, it was shown that in this project, in line with the academic literature on the matter, the children were placed into the usual positions of informants, testers, and design partners (Druin, 2002), but without any actual power of decision, which was firmly in the hands of the adults. Adults defined the project goals, chose the activities, and even guided the design sessions in certain "appropriate" directions. It was adults who made the decisions concerning the children's participation: the teachers agreed with the researchers and the parents signed the consent forms. This trajectory clearly contradicts the models arguing for children's genuine participation (Chawla, 2001; Chawla & Heft, 2002; Hart, 1992). These findings allow IDC researchers to implement children's more genuine participation in their projects.

As regards critical IS research, one can say that the positioning of the users, in this case, of the children, as subordinates to (adult) designers is nothing new: other studies have long ago indicated that

within adult design teams, the designers have grasped the authority and the power of decision, allowing users only a minor position and influence (Finken, 2003; Hyysalo & Lehenkari, 2002; Markussen, 1996). In our case, as well as in the existing literature, the adult designers were positioned as sympathetic to users and their participation while still functioning as the powerful, authoritative, educated actors. They—like designers in general within our discipline as well as anthropologists in cultural anthropology—have encountered, gazed, represented, and grasped the authority over the primitive, exotic, uncivilized "other" (cf. Asaro 2000; Clifford & Marcus, 1986; Iivari, 2006; Suchman, 1995). In this case, it may be that the "other" was particularly "exotic" and "primitive," as it referred to children. As children so far have remained invisible in IS research, this study contributes simply by making visible this unusual, vulnerable user group that should not remain neglected in future IS research.

The study also contributes through revealing novel challenges in working with users. Although the IDC, IS, and PD literatures as well as the literature on children's participation in general construct participation, democracy, and empowerment of all as ideals (e.g., Chawla & Heft, 2002; Druin, 1999; Greenbaum & Kyng, 1991; Guha et al., 2004; Iversen & Dindler, 2013; Schuler & Namioka, 1993), this study shows that users may not be willing to adhere to this and they may hinder others' opportunities to do so. This study shows that users themselves may hamper other users' opportunities to contribute. The researchers, representing our disciplinary background, were not prepared for such a situation, nor were they able to affect the situation. The researchers nevertheless tried to "involve all." On the other hand, they also expressed wishes that they would not need to do so. In certain cases, they wished that they would not need to work with the primitive, uncivilized, exotic "other." All in all, we claim that through this study, we made more visible that there is a participatory ideal acknowledged by researchers representing very different disciplines, but that there is also the brute reality encountered in the participatory projects (cf. Holone & Herstad, 2013). In this case, we were walking the tightrope between the ideal and the real, subtly indicating the existence of the latter in the project reports. The Foucauldian analysis approach enabled us to explicate some of that.

## 6.3 Implications of doing participative research and design with children

This study also provides many practical insights into doing participative research and design with children, especially considering the genuineness of children's participation. Many of these insights apply to working with adult users as well. Hence, we argue that even though we have positioned our study mainly within the IDC research field and ICT design, our results may have an impact on other fields of design as well, such as when user involvement is wished for to create products or services that users really need and are willing to use (Greenbaum & Kyng, 1991; McCarthy & Wright, 2004; Prahalad & Ramaswamy, 2004; Schuler & Namioka, 1993; Shostack, 1982; Simonsen & Robertson, 2013).

We wish to show with this study that even when we tried with our best intentions to follow the best practices in the IDC field, a reflective analysis reveals that we were not able to reach all the aims and how we actually realized this only afterwards with this analysis. We highlight the importance of researchers and practitioners reflecting on and openly considering what kind of discourses drive their work. This is important, as discourses impact practices that are external to them and non-discursive (Foucault, 1972). Different, often not foregrounded, values drive also IDC research (Yarosh et al., 2011). Our study shows that the decisions researchers make when planning and implementing their work with children are very much value-laden (cf. Iversen & Dindler, 2013) and always and

necessarily position the children as well as the adults in particular—not always desirable—ways. Had we used Chawla and Heft's (2002) framework earlier in our work, we would probably have been better able to foreground some of the values and discourses guiding our work, would have had a better possibility to consciously consider which aspects of genuine participation are crucial and need to be implemented in our project and which ones we do not or cannot acknowledge. On the other hand, not all such aspects are under our control and independently and rationally decidable by us—the way we position our research subjects as well as ourselves as researchers is heavily influenced, e.g., by the academic discourses circulating around the topic and speaking through us (Foucault, 1972).

However, in this section, we will offer some practical suggestions and point out some concerns related to doing participative research and design with children. First of all, we suggest the use of Chawla and Heft's (2002) framework for the planning phase of any project interested in children's genuine participation (or adults as well) in addition to the already existing best practices in the IDC field. In our reflective analysis, we realized that it would have helped us both to plan the project to include children more genuinely and to invite them to monitor the project during its course as well as to evaluate it afterwards. This would have reminded us about many aspects that need to be considered when promoting genuine participation, instead of mere tokenism or decoration. Next, however, we highlight a couple of issues in the framework that raised concerns in our study.

**The selection of participants and their motivation.** Some confusion emerged related to the "conditions of entry" (Chawla & Heft, 2002) in our case: What should we do with children who do not wish to participate? Should this be allowed in some cases? If children's participation is seen as valuable, e.g., because children are expected to learn important things when participating (cf. Sotkasiira et al., 2010), it may make sense to also encourage the unmotivated children to participate. Moreover, if in the school environment, the children's teacher considers the project to be beneficial for the children, it can be argued that the children should not be able to freely choose whether to participate or not (although in any case, children should of course be able to disallow researchers' use of the data they have produced). After all, there are probably many activities in school that children do not participate in willingly, which are still considered good for the children in terms of learning. On the other hand, in some situations, e.g., when children's learning is not among the goals of the activity, it could make sense to work only with the motivated and interested children, i.e., with the "suitable" ones. But would this be an acceptable choice for researchers striving for children's genuine participation? Everyone should have the right to take part and to have a voice, but how does one deal with those that do not want to exercise that right? The same questions could be asked also when working with adults. On the other hand, unmotivated users, be they children or adults, may make fun of the situation or even give wrong information, which may prove to be most unfortunate (as regards research projects as well as commercial product projects).

**Setting the project goals and making informed decisions.** In our project, children were not involved in setting the project goals or making the design decisions, but in some cases, this surely could be accomplished. However, it would then be important to ensure that children can make *informed* decisions. Our case reveals that informing children may be a real challenge, depending on the age of the children. Our case also reveals that there is a risk that too many "pooping, handicapped animals" show up in the design when children make the decisions. However, we do not know whether this risk would occur in a situation in which children are given real responsibility and decision-making power. In the end, we claim that in the current ICT design projects, children definitely could be more involved in decision-making. At the very least, all researchers could try to increase the transparency of decision-making so that children understand the reasons for the outcomes (Chawla & Heft, 2002).

Openness with design decisions could benefit commercial product projects as well by giving users an opportunity to point out misunderstandings in the designers' understanding of the users' needs. Moreover, when users set the goals, they are probably more committed to the project as well.

**The outcome of the project and evaluating results.** Often, researchers get more out of a PD project than the participating users, as in many cases users do not see any tangible outcomes of the project and the results may be only scientific papers that are not interesting for users (Simonsen & Robertson, 2013). We suggest that when planning a project, researchers should carefully consider what kinds of (preferably tangible) results are possible to produce for the research subjects. In addition to tangible outcomes, the researchers should also strive to accomplish research subjects' learning and gradual development of competence (Chawla & Heft, 2002). Moreover, by consciously setting the aim for the genuineness of children's participation, it becomes necessary to evaluate the project afterward from this perspective. The research subjects should also be invited to reflect and analyze whether the results meet the goals and aims of the project. The participants would thus be positioned as critical evaluators of the project, and not only as informants, testers, or designers (cf. Druin, 2002), which relates to the long-standing discussion about the empowerment of users in the IS research field, earlier related to workers, nowadays to users and citizens more broadly (e.g., Simonsen & Robertson, 2013).

**The issue of too much child-centeredness.** We invite our fellow researchers to consider how much is too much child-centeredness in a project, i.e., where to draw the line between practicality and beautiful visions about children's participation. The existing, very practical, IDC literature gives us a lot of advice on "how to help children to construct and express their views" (Chawla & Heft, 2002), but in practice, there are "unmotivated," "badly behaving" children and difficult practical situations without correct answers where the best practices and foregrounded values do not help. Children may create "too child-centered" designs and/or tease other children, inhibiting their meaningful participation. The existing power relations among children as well as between the teacher and the pupils are difficult for a research team to alter. In fact, Gee's (2004) discussion of affinity spaces (people drawn together for shared strong interests or engagement in common activities) suggests how difficult it may be to switch school children's perspectives from just "doing schoolwork" to becoming genuinely committed in completing tasks given in the school context. Nevertheless, discussing the values and discourses influencing our decisions together with the research subjects might still have been beneficial (cf. Iversen & Dindler, 2013; Yarosh et al., 2011).

## 6.4 Limitations of the study and paths for future research

As regards the generalizability of our findings, naturally, this case is very specific and similar kinds of reflective analyses of other cases are warmly welcomed (either dealing with adults or children). Generalizations in interpretive studies can be of a different nature, e.g., the development of concepts, the generation of theory, the drawing of specific implications, or the contribution of rich insight (Walsham, 1995). In any case, the particularities in empirical data should be related to the "ideas and concepts that apply to multiple situations" (Klein & Myers, 1999, p. 75). In our case, a "rich insight" into a participatory ICT design project with children was offered and both theoretical and practical implications identified as regards working with children, and more generally, users. On the other hand, in this paper, we are examining our own doings, which can be criticized as jeopardizing objectivity, but we have tried to be as honest as possible in our interpretations. Moreover, we show how "children" and their "participation" have been constructed in our texts, which provides a permanent and in a sense indisputable archive for critical inquiry. In contrast, we also wish to point out that in qualitative,

interpretive research "the data" is always socially produced through the interaction between the researchers and participants (Klein & Myers, 1999), hence making this limitation quite trivial. Then again, it needs to be noted that this was a critical reflection after the fact, i.e., we did not use Chawla and Heft's (2002) framework in practice, but were inspired by it afterward. We recommend that researchers try planning and implementing a project using this framework. Likely, it would provide beneficial results from the viewpoint of genuine participation for both adult and child participants. On the other hand, we acknowledge that the framework has been developed for community development purposes, where it is important that the participants are committed to the results; thus, genuine participation and the opportunity to affect decision-making is crucial. It is possible to criticize that in some situations, it is somewhat exaggerated to bring these kinds of values into "mere" ICT design. Finally, we wish to remind future researchers, in line with Malone and Hartung (2010), of the following: "Yet the challenge still exists to evaluate children's participation beyond a success or failure model—not asking if a project 'got participation right' or met the program targets, but considering 'whether, by being critically reflective and learning from the experience, the achievement of a culture of children's participation may become more realizable'" (Percy-Smith & Malone, 2001, p. 18)."

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