

Co-Design with Children

How to best communicate with and encourage children during a design process

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ABSTRACT

Children have gradually become more included in different stages of the design process. As co-designers, the idea is to view children as equal stakeholders throughout the entire experience, contributing to the process as experts of their own lives. It is important to acknowledge their competence and provide them with methods of self-expression that encourages comfort and creativity. This review paper explores various aspects of co-design, and different means of communicating with children. The focus will lie on discussing psychological aspects of child-adult collaborations, and important ethical aspects related to this. Additionally, the two methods of cooperative inquiry and The Mosaic Approach will be presented in detail, as examples of how to conduct a co-design process with children.

KEYWORDS: Co-design with children, participatory design, The Mosaic Approach, cooperative inquiry research, conceptual models, ethics.

1. INTRODUCTION

The landscape of design and design research has moved closer to the user over the last couple of decades. As a result of this, the term co-design has emerged from the well-known participatory design movement that started in the early 1970s (Stalberg, Sandberg, Soderback, & Larsson, 2016). Co-designing with users indicates collective creativity applied across the span of a design process (Sanders & Stappers, 2008). Designers have become increasingly aware of the value and expertise a user brings to the design process, and in recent years children have been included in this collaboration as well. Designers have begun to realise that children can be viewed as credible participants, with valuable knowledge and experiences about their own world and surroundings. The goal of this article is to discuss how to best communicate with and encourage

children as design partners, in order to make the co-design process feel beneficial and rewarding for both parties. Examples from a co-design process done in collaboration with a primary school (T-School) for this falls specialisation project will be presented in the text, in addition to examples from relevant literature.

2. CHILDREN AS ACTIVE PARTICIPANTS

To be able to communicate constructively with children, all parties must acknowledge that the child has a right to partake and possess an active role in the design process.

2.1 The right to participate

Children are marginalised in an adult-centred society, most of the time adults make the majority of their decisions for them and choose what is in their best interest. Co-designing with children

challenges this point of view, opting to see children as social actors who are *beings* and not *becomings* (Allison Clark, 2005). Children are skilful communicators capable of expressing themselves in many different ways, and they actively contribute to, and influence, the world around them. As experts of their own experiences it is important to include them in decisions regarding their own way of life.

Historically it has been challenging to bring children into decision making processes due to existing power gaps, biases, pre-made assumptions, and that children, especially young ones, have problems verbalising their thoughts and feelings (Druin, 2002). Landoni states that children are often included in the ideation phase of a design process, but rarely engaged in other phases and reflection. They are mainly considered final users of a new product or service (Landoni, Rubegni, Nicol, & Read, 2016). New co-design methods strive to empower children, and allow them to communicate in a way that is more accessible, and adapted to their individual expressive needs. Thus, making it possible for them participate in the process more equally with designers and other relevant adults.

2.2 Children’s roles in a design process

A child can be included in a design process in many different ways. Allison Druin describes four different roles a child can possess, namely that of a user, a tester, an informant or a design partner (Druin, 2002). While Druin mainly focuses on children in regard to the design of new technology, this should be adaptable to the design process in general. From a designer’s perspective, these roles differ from merely observing to actively working with a child. As a user and a tester, the child is to utilise and test new solutions while adults observe and learn from his or her’s experiences, thereby the child is given a passive role in the design process. As an informant on the other hand, the child is expected to give input in various stages of the process, and as a design partner he or she is considered an equal stakeholder throughout the entire experience.

Iversen, Smith and Dindler have built further on Druin’s model by introducing a role that empowers the child more in a design process; seeing the child as the protagonist (Iversen et al., 2017). Whereas treating the children as a design partners provides them with an important voice when developing new technologies through partnerships with designers, treating the children as protagonists encourages reflection and for the them to be the main agents driving the entire process. The focus is not only on working together towards a product output, but to enhance the insight, design skills and the reflective thinking capabilities of the participants. The Reggio Emilia approach to early childhood educations also embraces the notion of seeing the child as a protagonist, not only in the design process, but in everyday life (Hewett, 2001). In their view, children have rights and not simply needs, they therefore possess strength and competence to make decisions about their own education. This allows the child to discover and learn about the world, without being a mere target of instruction in the educational system. This philosophy and way of thinking has formed a basis for the Mosaic Approach by Clark discussed later in this paper.

Fenne Van Dorn expanded the role of the child in a design process even further, by introducing the role of co-researcher (Doorn, 2016). This role is overlapped by two different worlds, namely that of the researcher and that of the user. Being a co-researcher enables the child to gather rich data because they share the same context (of being a child) as the participants in a design process.

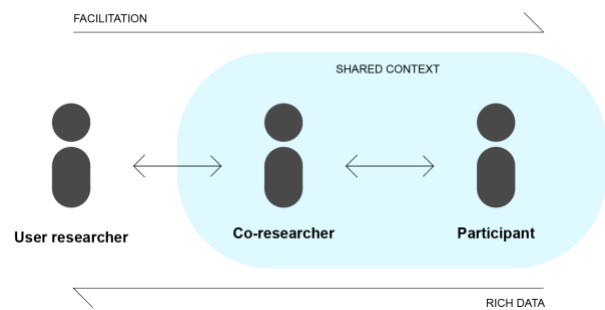


Figure 1: The co-researcher between researcher and user (adapted from Doorn (2016)).

	Objective of participation	Participatory process	Outcome measures from participation
Child as user	Researchers test a general concept that may help inform future technology or provide better understanding of the process of learning which may contribute to future educational practices.	Children are observed, video- taped or tested before and/or after technology use.	Knowledge about children's technology use and learning.
Child as tester	Researchers gain insights into children's use of a particular technology and eventually improve that technology based on these insights.	Children test prototypes of a particular technology.	Knowledge about the usability, utility, and experiential qualities of the proposed technology.
Child as informant	Researchers gain insights to inform the design at various stages of the design process by eliciting and including children's expert knowledge.	Children may be observed with existing technologies, or they may be asked for input throughout the entire design process.	Knowledge provided by children that relates directly to the technology being designed.
Child as design partner	Researchers give children a voice in the design process. Children and researchers co-design new and meaningful technologies by means of partnership.	Children and researchers engage in various design sessions with a shared goal of designing new technology.	Empowerment of children by giving them a voice in design. Development of meaningful technologies.
Child as co-researcher	Researchers and children gain contextual knowledge by jointly studying children's practices.	Children contribute to design by sharing, gathering, and analyzing data from their own use practice.	Knowledge about the design context and the possibility of incorporating this knowledge into new technology.
Child as protagonist	Researchers encourage children to be the main agents in driving the design process and thereby to develop skills to design and reflect on technology and its role in their life.	Children carry out a complete design process in which process and product reflection is a central component.	Children's new insights into design and digital technology and reflective stance toward technology in their life.

Table 1: An overview of the different roles of children in a design process (adapted from Iversen, Smith, and Dindler (2017)).

3. PSYCHOLOGICAL FACTORS

Good communication derives from a secure environment in which the children and adults feel comfortable being creative and challenging each other's points of view. To be able to do this, it is imperial to understand the mind-set of the child co-designer, and the limitations and possibilities it introduces to the process. Designers should take the child participant's cognitive development into consideration, and adapt methods so that they can be used as effective communication tools rather than seen as obstacles.

3.1 The power gap

A set of expectations follows a person that is introduced to children through other adults in those children's lives. If a designer or researcher is introduced by a teacher, the kids may view them as other teachers. In western culture in general, children rarely have contact with adults outside a

professional or family setting. Thus, the children might empower new adults in way that is negative in relation to the co-design process, and other types of collaborations with children (Fumoto, Robson, Greenfield, & Hargreaves, 2012). Both children and adult designers exercise power that inflicts on their behaviour towards each other. Although a certain degree of power follows the notion of "adulthood", children may attempt to challenge and shift this power. As an example of how children attempt to challenge a given power structure, Christensen wrote the following on children's reaction to formal power roles conventional to interviewing:

"... children would sometimes attempt to shift them, inverting the roles of who is the interviewer and who is the interviewee. They did this by simply grabbing the tape recorder and asking me various questions, often before an interview had really started." – Christensen (2004).

It is of great importance to even the power gap between the adult and the children when conducting a co-design session. The purpose of such a collaboration is to work together as equals, valuing the opinions of our partners as experts of their own experiences. Children have something valuable to bring to the process, and researchers and designers have something to learn. In order to extract this knowledge, co-design methods need to be adapted to the child's expressive needs. Children and designers need to meet on a common path where several different ways of expressing thoughts and ideas are considered equally valuable. Druin states that both children and adults need time to negotiate a new power structure, where neither of them are completely in charge. It is essential to meet the children at their level, while at the same time treating them with dignity and respect. Christensen argues that adults must avoid the pitfall of seeming childlike in a patronising manner, as they cannot escape the fact that they will come across as adults no matter what (Christensen, 2004). She proposes to establish a new understanding of what "an adult" is in a research and design perspective, to rewrite the role by neither trying to be a child or to be connected to typical characteristics normally associated with adulthood. The complexity of such a role was illustrated to her by the feedback she was given from a parent of children in a project she was working on:

"The children will miss you!! But I'll tell you something - they didn't always know what to make of you. I mean you haven't been an adult in the usual sense. They knew you weren't a teacher and that you weren't a mother, but I think sometimes they forgot that you weren't ten like themselves." – Christensen (2004).

Techniques such as interviews and writing often benefit the adult to a greater extent than the child, it is therefore important to utilise methods that is suitable for each specific child to communicate with. Druin proposes low-tech prototyping tools such as paper, clay, Lego, crayons etc. as a suitable common ground between adults and children (Druin, 2002).

Furthermore, it is positive to create a comfortable atmosphere by wearing informal clothes, using first names, allowing the children to contribute without raising their hand, sitting on the floor, and by communicating openly with the children (Borum, Brooks, & Brooks, 2015).

3.2 Conceptual models

Jean Piaget, a pioneer within the field of developmental psychology, states that all children go through four stages of cognitive development (Piaget, 1997). The average age of which these stages appear vary from one society to another, but the sequence of the stages remains constant. This means that children develop the ability to learn and take in new information at different rates. Piaget argues that children's mental model of the world is not only based on different types of experiences and interaction with the environment, but that biological maturations plays an important role in their ability to evolve and advance in the aforementioned levels.

Don Norman, a researcher within the fields of user centred design and cognitive ergonomics, describes how people create these kinds of mental models to understand themselves, others, the environment, and the things with which they interact. He refers to them as conceptual models. They help people understand products and situations, and work as a set of guidelines to help them reach their goals. Conceptual models vary from person to person, and they are built based on training, instructions, and experiences gathered in life (Norman, 2013). In short, they are basically our own explanation to ourselves of how something works. Adults have acquired several conceptual models, which have evolved and been refined through their lifetime. Children are younger and therefore have a different and a more limited set of experiences to build these models on.

This is positive in the sense that younger children are not limited to the mere purpose of an object or idea, but they can see new and creative opportunities:

If a young child is presented with a spoon it might try to shake it like a rattle, or look at its own reflection and use it as a mirror. It might not be familiar with its primary function of serving food.

Vygotski argued that the individual development a child goes through in life cannot be understood entirely by itself, but must be set in a social context (Brown, Metz, & Campione, 1996). This challenges the previously mentioned theory of Piaget, describing how this process relies merely on experiences and biology. Vygotski claimed that a child possesses the possibility to create a more mature solution if assisted, or when having to discuss and defend their own point of view. He stated that children's abilities in social interaction, by time will become part of their individual repertoire. Thus, working with peers and adults will be a good foundation to form a learning environment in which children can gather new knowledge and improve their abilities. This is supported by educational research that shows that working in pairs and groups have beneficial effects on learning and development, especially in early years (Benford et al., 2000). The educational philosophy of Reggio Emilia also bases itself on the theory stating that children can construct knowledge through social relationships. Even Piaget regarded peer interaction as beneficial in order to encourage children to consider multiple perspectives, and eliminate egocentric views.

3.3 Creating a safe environment

It is important to give young children the support they need in order to facilitate for creative freedom. As previously mentioned, low tech prototyping is a nice way for children and adults to express themselves, where both parties are equally able to utilise the materials at hand.



Picture 1: Child co-designers and student facilitator engaged in low-tech prototyping at T-School, decorating a model of their lunchroom using clay, Lego, paper and crayons, November 16th 2017.

Music and art are also good outlets for children's imagination, and play and exploration helps encourage creative thinking (Starke, 2012). In order to optimise the outcome of a co-designing session with children, it is crucial to use tools and materials that match the children's set of skills. The interplay between physical and social context is central when children take part in a design process. It is beneficial to set up a learning environment in which the children can learn from and give constructive feedback to each other (Doorn, 2016). Otherwise, the tools may end up distracting the children from reaching their goals. In order to create a safe and less demanding environment where participants feel comfortable enough to cooperate, it is beneficial to conduct usability tests and co-designing activities in-situ, i.e. in a familiar environment (Stalberg et al., 2016).

4. DRUIN'S COOPERATIVE INQUIRY RESEARCH

The co-design process should be educational and fun, containing specially modified activities that encourages and allows the children to feel ownership of the project from the very beginning.

4.1 Contextual inquiry

Contextual inquiry is a qualitative data-gathering and data-analysing methodology, used to gather information about users and their habits (Raven & Flanders, 1996). It takes place in a relevant context for the user, and is based on the formation of a partnership, where both user and designer work together to explore relevant issues. Druin adapted the method of contextual inquiry to young children to understand them as users. Children up to the age of five can at times experience difficulties discussing the world around them. Therefore, it is important to observe and capture their exploratory activity patterns in order to fully understand their needs (Druin, 1998). Druin found that one designer should interact directly with the children and ask questions about their current activities, while up to two others function as note takers. The roles were split like this so that the child would not be distracted or uncomfortable being in direct contact with a note taker. When working with children as co-designers, contextual inquiry can be adapted to fit a partnership based on mutual contribution from both parties. The children can be actively involved in the contextual inquiry method, as opposed to the more passive part they take on if they were considered informants in the design process. This is done by involving them actively in the note taking and data-gathering process. Thereby encouraging child co-designers to interact directly with child users (Druin, 1999).



Picture 2: Child co-designer showing his notes from an interview session with peers at T-School, November 14th 2017.

As previously mentioned, Druin explored and adapted this method to best fit younger children. Her findings have later been developed further by researchers from the University of Maryland and the University of Baltimore to suit children in the age span 10 to 13 (Summers et al., 2003). The older kids took on more responsibility by helping the researchers develop field guides, learning about interviewing techniques and about the method of contextual inquiry. This connection to the process itself, including the fact that they were a fixed team of kids working on the project over a longer period of time, made them more effective, enthusiastic, and develop a sense of ownership to the solution they were designing.

In Baltimore, the children took on the roles of co-researchers. During contextual inquiry interviews both children and adults took notes either by writing or drawing their observations. These observations were later discussed in a group session, where the children and adults drew conclusions together and decided on how to proceed further (Summers et al., 2003).

4.2 Participatory design

Druin adapted the strategy of participatory design to suit children in order to receive their direct input and thoughts in a design process (Druin, 1998). She found that working in groups creating low-tech prototypes levels the playing field between adults and children, because they work with material and technology they are equally skilled at. An ideal group consists of two to four children and two to three adults, Druin argues that one adult should never be placed alone in a group of several children, as this will create a student-teacher dynamic. Working with children in the age range of 7 to 10 is beneficial because they make the most effective design partners. According to Druin this group of children are able to understand abstract concepts, but they do not yet hold to strict opinions of how things should be. Piaget places this age group within the “concrete operational stage” category, a group of children that are likely to appreciate someone else’s perspective, but in contrast to Druin he argues

that they are not yet able to conceive abstract or hypothetical thoughts (Doorn, 2016).

5. CLARK'S MOSAIC APPROACH

Embracing the philosophy of there being multiple and equally correct ways of expressing oneself, leads to open and including environments. This is often a good foundation for encouraging children to participate with their own opinions in a group setting.

5.1 The method

Allison Clark's Mosaic Approach is a way of facilitating for a meaningful exchange of opinions between child actors and adult actors in a participatory design process (Allison Clark, 2005). It opts to see children as rich, active and competent, as opposed to helpless and in need. The approach bases itself on treating children like experts of their own lives and experiences, and encourages all participants to reflect on intricate questions. It consists of several different activities and methods (mosaic tiles) in order to accompany children's many different ways of expressing themselves. This is inspired by Reggio Emilia's hundred languages of children theory (Hewett, 2001). Reggio Emilia's philosophy is based on the fact that there are multiple ways of knowing. Since knowledge is socially constructed and dynamic, there is no undisputed truth. Thus, there are multiple ways of expressing oneself, the children are therefore encouraged to interpret knowledge through dance, art, music, writing and the like.

A way of expressing thoughts:

We are exploring the lunch room at T-School with five child co-designers. The session starts with an open discussion followed by drawing and a guided tour of the lunchroom led by the children. It ends with the children being given disposable cameras to document important elements at their school. One child is not particularly active during the first parts of the session, but when being presented with a camera this child takes the lead and seems to deeply care about the task at hand.

This shows that utilising the hundred languages of children theory by introducing multiple options for self-expression, can help designers and researchers gain rich insight.

The Mosaic Approach is divided into three main stages (A. Clark & Moss, 2011). Stage one focuses on gathering child and adult perspectives, this stage is made up of observations and interviews with the children. This is done with the help of various co-creation techniques that play to young children's strengths, like picture taking, tours, making maps and the like. Stage two focuses on piecing together the information gathered for reflection and dialogue, combining the mosaic pieces of stage one gives great insight into the children's priorities. From this information, a set of reflective questions are formed. In this stage, the children, parents, teachers and researchers all contribute with their perspectives. Clark's study of outdoor spaces in a kindergarten shows that it is important to extract information from different stakeholders in the process:

Observations that later were confirmed by photos taken by the children, showed that the kindergarten's playhouse was important to the children. The parents confirmed this, but the practitioners identified this as a source of tension due to its small size. This shows that it is important to talk to and include the adults that know the children, in order to properly interpret the results from observation and group activities (Allison Clark, 2005).

In stage three the participants decide together on continuity and change. This stage links listening with action. Using the information from stages one and two, decisions are made about which parts should remain the same and which parts that could benefit from change in the "old" solution that has been explored.

6. ETHICS

When working with children, it is important to consider ethical aspects of the collaboration. In a co-design process, children are to be considered

as equal stakeholders throughout the entire process. Thus, they should be informed about different aspects of the project, and their own rights and privacy concerns.

6.1 The right to participate vs. the right to be protected

Arguments about ethics in social research with children depends on whether or not children are considered equal to or different from adults. Morrows and Richards argues that adults often differentiate children from themselves by viewing them as vulnerable or incompetent (Morrow & Richards, 1996). Viewing children as less capable leads to adults that are not able to see their full potential, and reflects a cultural reluctance to take children's opinions seriously. Overprotectiveness also reduces children's potential to contribute with relevant opinions, and may in many cases lead to adults misunderstanding and having little knowledge about various aspects of children's lives. Children have a right to contribute and have a voice, but with this being said, they also have a right to remain silent. It is their choice whether they want to contribute or not.

Adult's fears and assumptions towards children has a major impact on how they treat them, the same goes for researchers and designers when it comes to choices of methods and interpretation of data in design processes (Punch, 2002). Allison James identified four different, overlapping ways that adults understand children: A developing child, a tribal child, an adult child and a social child (Morrow, 2008). The developing child is often underestimated and not taken seriously, researchers with this view tend to base observations on their own interpretation of data. The tribal child is considered to be a competent actor of a separate world that is different from the adult world, here researchers study children's actions as unfamiliar from an anthropological perspective. The adult child is considered a competent participant in the adult centred world, researchers therefore use the same methods as they would with adults. The social child is seen as comparable to an adult, but with a different set of

competencies. This view encourages researchers to play on children's abilities in their research and allow them to express themselves through mediums that are familiar to them. The social child view is relatable to the research of Alison Clark and Allison Druin. It takes into consideration the fact the children are encouraged to express themselves differently than adults, and that acknowledging this might be beneficial in research.

Gerison Lansdown, an international children's rights consultant, describes that all children are in fact able to express a view (Lansdown, 2005). She states that children from birth develops skills that make them able to participate, and that adults have to nourish and strengthen these abilities. Adults working with, or caring for children, are obligated to create a space where children can express themselves, and to take their opinions seriously. Lansdown also states that children who are allowed to participate will reach a higher degree of competence, which then again will increase the quality of their work, as previously described by Vygotsky.

6.2 To regulate and meet expectations

In order for the co-design process to be beneficial for both parties (in this case the designers, the institution, and participants with which they cooperate) it is important be familiar with each other's goals, and the possible outcomes of the process. Designers should be clear in their communication with the children, especially when discussing tasks, privacy, and how results will be used.

A transparent process will enhance the degree of trust built between the participating parties, and the degree of knowledge sharing. A design process should be beneficial for all parties. It should not only provide the designers and partnering institutions with research material and solutions, but provide the participants with new knowledge and skills. Thus, it is important to evaluate a participatory design process not only on tangible outcomes, but on the learning experience of the

different participants, values in the project and the grounding epistemological perspectives (Frauenberger, Good, Fitzpatrick, & Iversen, 2015). In summary, co-design should be a mutual learning process.

Frauenberger, Good, Fitzpatrick and Iversen provide four different lenses for reflecting on a participatory design process: Epistemology, values, stakeholders and outcomes. If participants enter a design process with different expectations and priorities, the development of a consistent design methodology can be hindered. The lenses shown in Figure 2 can help designers evaluate and ask critical questions in regard to participatory design work, and reflect on knowledge, values, participation and outcomes that have derived from the process.

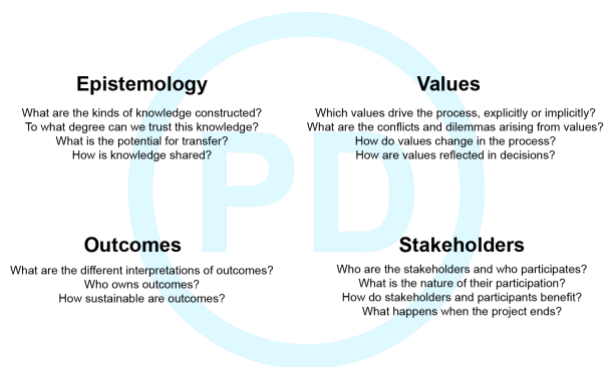


Figure 2: The four main “lenses” through which one should evaluate participatory design work (adapted from Frauenberger et al. (2015)).

6.3 Acknowledge the child’s understanding of the situation and of privacy concerns

Children are aware of their own environment, and curious about new people who are introduced to it. They are often interested in why designers and researchers want to document their behaviour. They have the right to know what the material is used for, and about their own right to privacy. Including the children in these decisions can lead to a more seamless process, when the children understand why a decision is made it will in many cases be easier for them to support it:

Consent forms:

When collaborating with T-School all the parents of the participating children had to fill out consent forms. The children were made aware of this at an early stage, and of course that participation was voluntary. During one of the last workshops the group was working in the music room right next to the lunch room. Suddenly the room next door fills up with children ready to have lunch, and everyone are curious as to what is going on in the music room. As these children did not have consent forms they could not participate in the workshop even though the child co-designers in the group thought it would be fun to include them. When reminded that the other children did not have these consent forms, the child co-designers completely understood and helped explain this to their friends.

Christensen describes that during her research with children, she found that it was positive to be open and transparent about children’s own privacy concerns (Christensen, 2004). She would start each session describing who would be allowed to listen to or read the material that would be produced, to reassure them that it would not be exploited in any way. Thus, playing up to children’s own social conventions and norms about “keeping secrets”, which is a practice they can relate to. This would help the participants be more trusting and confident of the process.

With this being said, it is crucial that designers and researchers understand their moral obligations as adults, even though this may lead to them losing credibility in the eyes of the child. If a child should disclose that he or she is at risk of harm, the adult has a duty to report this to a professional that can help and protect the child in question (Morrow & Richards, 1996).

7. DISCUSSION

At the core of co-design methodology lies the philosophy of users being experts of their own domain. It is the responsibility of the designer to facilitate the process in such a way that the participating co-designers can gain access to, and build on, their experiences in a creative manner.

When working with children it is important to make them understand that they are trusted members of the team, and that their opinions are of value. Several researchers within the field discuss the importance of minimising the power gap that exists between adults and children, as a catalyzer for openness and participation. The challenge is to find a good balance between being in control as a facilitator, and being open to the participants suggestions and ideas. It can be difficult at times to know how much the facilitators should influence the children, and if the children respond with their own opinions or if they are saying what they think the everyone would want to hear. Designers have to be cautious about this, so that they do not interpret or sway results only to confirm pre-existing beliefs. The co-design process is centred around being as open to new mind-sets and opinions as possible.

Children are often used to following the rules of adults, it can therefore be challenging to establish a completely flat power structure within a group consisting of both adults and children. One reason for this can be the fact that the facilitators will have administrative duties that requires them to lead the process and make certain decisions. This brings forth the challenging question of how to share responsibility between parties in a co-design process, and if this can lead to a more evenly distributed amount of power in a group. There are many different roles a child can have, resulting in different degrees of personal involvement and responsibility to take on, in regard to both the outcome and the process. Good results come from the mix of the children's personal expertise, the facilitators' design related expertise, and the facilitators' ability to transfer process related knowledge to the co-designers. During the co-design process at T-School it was difficult to find a balance between the facilitator's degree of involvement and the co-designers' right to independence at first. This derived from a fear of feeding a power gap if too many guidelines were introduced early on in the process. Eventually it became clear that when the facilitators contributed and guided the children with their knowledge on problem solving and

ideation, the co-designers were eager to utilise their methods and build new ideas with them. Allowing the children to reflect on the methods used brought more value to the project. This is why Iversen, Smith and Dindler's view on the child as a protagonist is of great interest in a co-design process. When the child takes on the role of the protagonist, he or she is also the main agent driving it. This brings more responsibility, and requires a good amount of knowledge sharing between the participating parties. If done successfully, it will help build a better foundation for a learning environment for the child, and as stated by Vygotski be a creative context where children can expand their repertoire of abilities.

In order to facilitate for the child to be the main driver of the process, the facilitator has to be able to create a good knowledge sharing dynamic in the team. As Christensen has pointed out, the important aspect of being a different kind of adult could be beneficial in this context. The facilitator would have to pass on knowledge about methodology in such a way that the child would be able to make decisions in regard to design activities, often involving other users with a similar context as participants. At T-School the participants were eager to try out the method of contextual inquiry with their peers, and they quickly began forming relevant questions and planning their approach on their own. Being able to influence the method that was used seemed to encourage them to take the task seriously. The facilitators were used as sparring partners, and asked for advice when needed. For the children, it was important to have people on the team that they could rely on, and that could encourage and guide them through the process by contributing with design related experience. That was when the real partnership based on mutual contribution and learning was formed.

Being able to facilitate for successful co-design processes is of value not only to the children, designers and researchers involved, but to society as well. By including children, who are a big part of the population, in important decision-making processes a lot of valuable knowledge can be

gained. It also sets a focus on their right to have a voice in matters that are central in their lives. When co-design processes are structured to be valuable learning experiences, children will be empowered and better equipped to hold an opinion in their everyday life in the future.

7. CONCLUSION

In conclusion, listening to children's opinions and creative input is beneficial for the design process and society in general, and will help create stronger outcomes and experiences for specific user groups. Co-design with children often encourages and challenges both adults and children to work together outside of their own comfort zones, enabling them to acquire new knowledge based on a mutual learning experiences. The partnership and dynamic that is formed between the parties in a co-design process forms the foundation for communication and idea generation. Allowing children to express themselves through mediums that are familiar to them, and mixing this knowledge with design competence, will enable designers and researchers to view products and services aimed at children in a different manner in the future. Both Druin and Clark encourages this kind of openness and variety in method use in their research.

In the future, it would be interesting to see how the child's role as a main driver of the process will be developed further, as Iversen, Smith and Dindler, and Doorn has explored when defining the child as a protagonist and a co-researcher. An interesting aspect of this is how designers can provide the children with methods and means of expression, not only to research a specific technology, but to transfer knowledge about methodology and teach them how to lead a design process by themselves.

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