

This is an electronic reprint of the original article. This reprint may differ from the original in pagination and typographic detail.

The Provotype as a methodological exploration in educational research

Heikkilä, Mia; Andersson Schaeffer, Jennie

Published in:
International Journal of Research and Method in Education

DOI:
[10.1080/1743727X.2022.2035353](https://doi.org/10.1080/1743727X.2022.2035353)

Published: 01/01/2022

Document Version
Final published version

Document License
CC BY-NC-ND

[Link to publication](#)

Please cite the original version:
Heikkilä, M., & Andersson Schaeffer, J. (2022). The Provotype as a methodological exploration in educational research. *International Journal of Research and Method in Education*, 45(5), 535-550.
<https://doi.org/10.1080/1743727X.2022.2035353>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

The Provotype as a methodological exploration in educational research

Mia Heikkilä & Jennie Andersson Schaeffer

To cite this article: Mia Heikkilä & Jennie Andersson Schaeffer (2022) *The Provotype* as a methodological exploration in educational research, International Journal of Research & Method in Education, 45:5, 535-550, DOI: [10.1080/1743727X.2022.2035353](https://doi.org/10.1080/1743727X.2022.2035353)

To link to this article: <https://doi.org/10.1080/1743727X.2022.2035353>



© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 07 Feb 2022.



Submit your article to this journal [↗](#)



Article views: 738



View related articles [↗](#)



View Crossmark data [↗](#)



OPEN ACCESS



The Provotype as a methodological exploration in educational research

Mia Heikkilä ^a and Jennie Andersson Schaeffer^b

^aFaculty of Education and Welfare Studies, Abo Akademi University, Vasa, Finland; ^bMaladalen University Sweden, Vasteras, Sweden

ABSTRACT

Preschool, understood as being both a physical and psychological environment, is, according to objectives in national curriculum, required to be inclusive for all those who attend it. Previous studies have identified the stereotypical norms of several everyday activities of preschools, including both interactions and premises. The aim of this article is to present and discuss a possible methodological idea of a 'provotype' as a model for re-representing empirical analysis based on different data types that are combined in a research process. Research concerning provotypes will be presented. The research method will be presented in detail and the analytical process described. In the results section, the provotype and its aspects will be presented. Both during the work with the provotype as well as afterwards we have learned that working with the 'provotyping' (what we like to call the whole process of analysing the results, visualizing, discussing the form of it and our reactions to the provotype) involves several phases of exploration and those phases includes uncertainty. A provotype might be a good way of re-illustrating, or as we put it re-representing, results from case studies with a number of different data, as in this study.

ARTICLE HISTORY

Received 5 March 2021

Accepted 23 November 2021



KEYWORDS

Provotype; preschool; participatory method; photo elicitation; early childhood education

Introduction

Swedish preschool is attended by approximately 98 per cent of the country's five-year-olds (Swedish National Agency for Education, 2021). It is a major societal institution and public space that can be viewed as the first formal collective arena of identity formation for children. Preschool, understood as being both a physical and psychological environment, is, according to objectives in national curriculum, required to be inclusive for all those who attend it. Preschools in Sweden are free of charge for all children over the age of three, and their assignments cover both care and learning.

One of the most explicit commitments within early childhood education and care settings in Sweden is the promotion of children's play. Play is widely understood as a means to contribute to learning and development (Ärlemalm-Hagsér & Sandberg 2011; Broström et al. 2015) and in studying play there are a number of different methods to implement and also further develop play through. While the dimensions of play are scrutinized in research, the question remains as to play can be best promoted and implemented in order to include all children in play activities having issues such as

CONTACT Mia Heikkilä  mia.heikkila@abo.fi  Faculty of Education and Welfare Studies, Abo Akademi University, Vasa 65101, Finland

© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

gender, age and ability in mind (Sutton-Smith 1987; Sandberg and Pramling Samuelsson 2005; Knutsdotter Olofsson 2017).

In Sweden, where the study of this article is situated, schools are obliged to actively and systematically ensure equal rights and opportunities, regardless of children's gender, ethnicity, religion, disability, sexual orientation, transgender identity or expression, or age. As noted in previous studies, regulations for state-run Swedish preschools – who provide care for children aged between one and five years of age before they enter elementary school – further underline the obligation to respect human rights and basic democratic values, including freedom, equality, gender equality, integrity, and solidarity (Swedish Schools inspectorate, 2017, Eidevald, 2009 Hellman, 2010). It is specified in the national curriculum of preschools that no child should be delimited by stereotypical notions of gender in school and that preschools should enhance knowledge and values among children based on an established value system (National Agency of Education 2019, Andersson Tengnér & Heikkilä 2017). These clearly articulated values in preschool contexts are considered challenges to established notions of fixed gender among children (Paechter 2007), as well as the myth of natural and innocent childhoods where gender-equality interventions are unnecessary (MacNaughton 2000). These underpinnings thus adds a necessary heteroglossic understanding of gender inequality to dominant monoglossic understandings by recognizing the occurrence of individual, gender-transgressive performances beyond the dualistic notions of femininity and masculinity that have served to maintain patterns of gender inequality (Francis 2010). Such understanding of gender relations highlights the constant negotiation of norms in the everyday life of state-run schools concerning what is possible, right and wrong, normal and deviant, etc. (Andersson Tengnér & Heikkilä 2017).

Research review

Previous studies have identified the stereotypical norms of several everyday activities of preschools, including both interactions and premises. Boundaries and hierarchies regarding gender and other social factors have been distinguished in the construction, denomination, placement, and usage of both rooms and materials (e.g. toys, literature) in preschool settings. Various rooms, materials, colours, and symbols are ascribed stereotypical identities by both staff members and children. A simplified example is how the colour pink is easily linked to girls and femininity, while toy trucks are linked to boys and masculinity. It has been proven that the size, furnishing, decoration, naming, visibility, flexibility, and equipment of the rooms in preschools affect these notions and determine the delimitations of children's play and learning (Seland, 2012, Paechter 2007). The central position of toys in children's play can have both amplifying and moderating effects on the gendered and segregated toy preferences that are adopted at an early age, as toys are used by children to negotiate their gender (Heikkilä 2016; Serbin et al. 2001).

Play has been proven as essential to children's learning and development, requiring equity and equality while also forcing children to relate to prevalent power relations in the situation, organization, and society. However, this relation can result in segregated and hierarchical play (Davies [1989] 2003; Heikkilä 2016). These power relations are manifested both in the interactions between the children and between the children and preschool staff (MacNaughton 2000; Paechter 2007). In Swedish studies, staff members have been found to use softer voices, more words, and more intimate body language when interacting with girls. In contrast, demands placed on boys by staff members are correspondingly lower in terms of their adherence to the rules as well as their behaviour, social skills, maturity, and independency (Andersson Tengnér & Heikkilä 2017; Heikkilä, 2016, Hellman, 2010, Eidevald 2009).

The indoor educational environment is where most preschools of the play happens. The indoor environment can be related to the possibilities of play, and how that environment is shaped, and what affordances for play it offers is of importance when it comes to including children (Kress 2003). While researchers devote time to studying certain activities going on in preschools, the indoor environment and its relation to learning and play are researched more seldom. Rooms are,

as De Jong (2010) claim, carrying elements of inclusion and exclusion depending on their physical and psychological constitution. Eriksson Bergström (2013) also clearly show how rooms in ECE settings often are shaped for certain kinds of activities, which also function as a 'restrictor' for what children see as possible to play. Her results also show how flexible large rooms, without clear markers of expected play gives the largest possibility for children to be creative, negotiate actively and use their own agency when shaping play.

Provotypes has not previously been in focus in pedagogical research, but in the field of design this way of staging norms to make them visible and understand more about the creation of norms and norm changing has been explored in different sectors of society, such as the construction industry and healthcare. A provotype as a norm critical practice has potential to bridge the gap between theory and practice in norm-critical work when using design as a pedagogic tool that can concretize and make understandable what would otherwise be perceived as complex, unclear or remote (Ehrnberger et al 2012; Ehrnberger 2017). The idea was that a provotype would provoke and direct our analytical gaze to aspects of the indoor environment in broader ways, since earlier research could not provide that support. In our research process we wanted to actively include children and teachers in different parts and the reflections and thoughts we got from them needed to be analysed in a thorough way and affect the work. (Could a thought-provoking summary of a first step of the analysis help us in further analysis? Would it be possible to do it?)

Designers and design researchers have different motivations for including visualizations in their practice, depending on the stage of the process. In a study of service designers (Segelström et al. 2009), three theories were identified when the service designers captured raw data visually. The first was to *maintain empathy with the stakeholder*; the second was to *communicate insights*; and the third was to *articulate insights*. The visualizations used to maintain empathy with stakeholders ensure that the users' input is not forgotten in the research process. Not maintaining communication with the user may lead to the creation of a self-centred rather than user-centred design (Pruitt and Aldin 2006 in Segelström et al. 2009).

Aim and research questions

The aim of this article is to present and discuss a possible methodological idea of a 'provotype' as a model for re-representing empirical analysis based on different data types that are combined in a research process. The aim is, in an exploratory manner, to discuss aspects of a provotype and its content as well as how the provotype can re-represent an analysis in an alternative way compared to written text. Can we see other aspects of a phenomenon when written text is not focused on? What are the consequences when animated pictures are in focus? These open questions lead to the following research questions that have guided the analysis in this article: In what ways can a provotype be used as a way of re-representing analysed data? How can a provotype support creative ideas in a research and development process?

The article will briefly present the overall research project from which a provotype has evolved. Research concerning provotypes will be presented. The research method will be presented in detail and the analytical process described. In the results section, the provotype and its aspects will be presented. In order to 'get used to' the idea of the provotype, we have added pictures from an animated provotype. There is an animation of a provotype that can be watched when reading the results section as well as during different parts of the results section.

Developing a provotype in a research and development project

The research and development project wherein which the provotype was created focuses on norm awareness in children's play in preschool indoor environments and the provotype discussed and elaborated on in this article is a methodological step on further exploring that. By combining

knowledge and experience from teaching, architecture, design, norm criticism, and theoretical and practical knowledge, the research project tries to find new solutions and challenges by synthesizing these areas. These new solutions, designs, and patterns of play will comprise concrete changes to the environments of the preschools.

The aim of the research and development project from which the 'provotype' have evolved has been to create indoor environments that allow for and support children's right to play and to detach children and play from limiting social norms such as gender and age. The research project included re-moulding two preschool units in a Swedish municipality. The re-moulding was based on interactive methods and knowledge synthetisation in the areas of education, architecture, design, and social innovation. The relations between the concepts of play, learning, gender, age, and the indoor environment are investigated in the study. The overall results of the R&D-project is published elsewhere (Lindberg, Heikkilä & Andersson Schaeffer 2017, Heikkilä et al 2020)

What is a provotype? – definition in literature

The provotype as an idea was developed in the early 1990s (Mogensen 1992) and has since been used in processes of design research to visualize norms and create a space for conversation about norms, design, and desired futures (Boer 2011; Ehrnberger, 2017). Or as Yndigegn and Fovreskov (2011, 106) put it:

'The provotypes and critical design artifacts are not user oriented in the sense of accessibility. They are static objects made with a high degree of finish, in genuine materials.'

Mc Donnell (2011) says it can also be used as showing a new way of experiencing something, for instance a room. A provotype can also be used together with different stakeholders in society (e.g. decision makers and users). The provotype can then have a double aim – to be used externally (i.e. outside the research project) to explore and encourage dialogue, and to be used internally as a tool to create norm-conscious spaces. What can be interpreted of earlier research is that there is no specific way of using a provotype, but a number of different approaches.

In this research process, an animated provotype is understood as a number of exaggerated (moving) sketches of the norms visible in the everyday practices of preschools. The sketches are unrealistic, and the aim is that they visualize the structures of society (in this case, preschools), raise discussions about said structures, and provoke reflections on the prevailing norms and structures of society.

The empirical data used to form the provotype is photo-elicitation with children, interviews with teachers and indoor observations in three preschool units. A multimodal approach has lent a certain perspective to the data. Written texts still remain the dominant method of communicating research results which risk to narrow the ideas of what can be said and thought of a data set. However, this article tries to explore the use of the provotype both as a provocative way to handle dilemmas in different societal institutions and as an explorative way to present analytical results.

A multimodal social semiotic approach functions as a means of displaying how power relations are established in the context of children's meaning-making and how children as active agents of their contexts are shaping said contexts in different ways. Children and teachers communicate their understanding of an institution such as an ECE setting in different ways, including through photographs and spoken word, and we relate this to their understanding of how the affordances of their indoor environment shape their understanding.

Our approach means that different theoretical concepts need to be determined for different aspects of the analysis. In this analysis, a qualitative content analysis (Bryman 2011) comprises the overarching perspective, and we employ an inductive approach in order to include different knowledge areas and we let a multimodal representation, a provotype, present the findings of a data set.

By carrying out a qualitative content analysis of the empirical data, the representations of different aspects of preschool life are explored, with a strict focus on the research questions.

Implementation

The case study design has proven fruitful when exploring new, complex, and contemporary phenomena in real-life contexts where the researchers have limited control over events and where the research questions begin with how or why (Yin 2009). For this study, the single case study approach was considered the most promising in terms of the development of new knowledge for the topic in question. The case study approach was chosen due to its unique ambition to reconstruct preschool premises based on clear values of democracy and gender equality in relation to children's play and learning. This case study provides insights into the role that contextualized norms and values play in social transformation processes. As well as this, it explores the materialization of such norms and values in relation to the construction of public preschools.

Access to this case presented in this article was ensured by pre-established contact between the municipality in charge of all state-run preschools and the leader of the study, based on the latter's extensive record of studying gendered relations in preschools. (The project funded the working efforts of three researchers, two architects, and the materials required for the reconstruction. The municipality funded the working efforts of their representatives and the construction workers. This study encompasses the first phase of the rebuilding process, where prevalent boundaries for children's equal play and learning in preschool premises were identified as the basis for subsequent reconstructions.)

Participatory methods

A participatory research approach was essential to enable a scientific study of the reconstruction process and guarantee continuous dialogue and interaction between the municipality, the architects, the preschools, and the researchers throughout the complex innovation process. This approach prescribes joint knowledge-development by researchers and stakeholders in order to make the knowledge that is developed more socially robust, thereby increasing the contextual validity of the study (Aagaard Nielsen and Svensson 2006; Coghlan and Brydon-Miller 2014; Reason and Bradbury 2008). Numerous participatory design studies that use visuals to involve different stakeholders have focused on adults, children with profound disabilities, and teens (Segelström et al. 2009; Arcia et al. 2016; Literat 2013; Börjesson et al. 2015; Larsen and Hedvall 2012).

A participatory challenge in this study comprised the stakeholders' varying institutional affiliations and power resources. The municipality representatives involved had, for example, considerable formal power over the planning and budgetary processes due to their affiliation with the public institution responsible for the preschools. The architects, who were from a private company, had less formal power but considerably more informal power over the practical planning of the reconstructions. The preschool staff had some formal power over the everyday planning of the preschool premises and considerable informal power over the everyday activities and interactions in the preschools. The children had considerably less power, both formally and informally, while their parents had extensive informal power over the children's involvement in the process. These variations in affiliations and power were thoroughly dealt with in the study by prioritizing municipality representatives and preschool staff in discussions of the practical and ideological aspects of premise reconstruction; prioritizing the architects in the discussions of alternative designs of the preschool premises; prioritizing the children in the observations and experiences of everyday life in the preschools; and prioritizing the parents in the ethical approach used for their children's involvement.

The children at the preschools were included in all parts of the process, since research shows that children are rarely consulted when discussing the organization of preschools, despite the fact that

children should have an influence on their everyday environment, according to the Swedish preschool national curriculum (National Agency for Education, 2019).

The first part of the project made use of photo-elicitation interviews, where the user of a particular room was given the space to share their experiences, habits and actions related to the place through photographs (in our study taken by the children with the help of a researcher) (Epstein et al. 2006; Andersson Schaeffer 2014;). In addition to the analysis of this material, semi-structured interviews with the personnel, children, and city council were conducted, and prior research was compiled, together with this new knowledge.

Teacher group interviews

In order to create a data set with a wide range of ideas of the environment data were collected from two group interviews and two individual interviews with eight teachers at the three preschools. These qualitative group interviews had a purpose to give a view of the indoor environment from an adult perspective, and had the focus to be informative and give ideas. The child perspective was prioritized and therefore the information given in these interviews would support ideas that we would get from the photo-elicitation.

Each interview was conducted at the teachers' workplace, during winter 2017 and lasted between 30 and 55 min. All of the interviews were transcribed. The interviews were conducted in spring 2017. Consent was given by the teachers and the research project has met the ethical standards required by the Swedish Research Council (2017).

Photo-elicitation

In the pedagogical field, researchers often use visual methods (e.g. photography) to involve students in their efforts to discuss their learning environments. In this field, photography in the form of photo-elicitation is used as a support for dialogue and is a key tool in studies that involve children and other actors in design processes (Clark 2010; Hartnell-Young and Fisher 2007; Koralek and Mitchell 2005). Burke (2005) discusses the ability of young children aged six–twelve years to contribute to the development of play environments and believes that photo-elicitation provides data that can influence planning and change strategies for play at both local and national levels. Photo-elicitation has also been used with children aged eleven–sixteen years to rebuild a secondary school in the UK (Woolner et al 2010). Rasmussen (2004) used photos for children aged five–twelve years to research meaningful places for children. Ali-Khan and Siry (2014) researched the experience of a learning environment also using photographs and children aged four–six years. Olsson and Lindgren (2019) discuss how children's use of digital cameras in creating video films is a way of creating active participation. In relation to the practice of creating participation with children aged three–five years, it can be challenging to identify appropriate methods (Davies 2014; Hohti & Karlsson 2014). However, the use of ethnographic methods such as photo-elicitation has shown promise for children of this age (Clark 2010). Photo studies involving children of this age have allowed the children to document their lives, while the cameras offer children a photographic and visual voice that they do not have access to otherwise (Magnusson 2017). Photo-elicitation has also been used by Pyle (2013) to allow children to share their experiences of learning in the classroom. Pyle (2013) also asserts that children aged three–six years can share accurate personal experiences.

For the photo-elicitation used in this study, around 40 children took pictures of their environment and then individually discussed their experiences with one of the researchers. This part of the research took place at the setting, during regular activities. Allowing very young children to use a camera and talk about their own photos in order to articulate their opinions on which places are important for them has been perceived as an appropriate method for understanding the way the children create meaning in their existing preschool spaces (cf. Clark 2010). All of the children's parents were informed of the details of the study and were asked to give their approval through

informed consent forms. The municipal representatives, the preschool staff, and the architects were involved via interactive dialogue sessions that were continuously arranged throughout the process. In these sessions, the planning of the continuing work and insights of work done were jointly discussed based on previous theoretical and practical knowledge of norm-creating processes in preschool settings. Participatory observations were also carried out at the three preschools in order to distinguish the usage of the premises by the children and staff. This triangulation of data collection methods is in accordance with Yin's (2009) theory – namely, that the richness of the phenomena studied in single case studies requires multiple data sources to ensure that the numerous relevant variables can be grasped.

The data gathered from the photo-elicitation with the children comprised a major portion of the empirical data used to develop the provotype. It consisted of 184 images and eight hours of interviews. The children were given one mission at a time (three in total), and I used body language in order to communicate the missions to them. The missions are presented below.

- (1) Your first mission: Think about a place in or outside the preschool that you like to be in or play in and take a photo of it.
- (2) Your second mission: Think about a place that you don't like to be in or play in in the preschool and take a photo of it.
- (3) Your third mission: Is there a place in the preschool where you have not been so often? Would you like to take a photo of that place?

Visits

During this period of gathering data we visited the preschool units several times. This led to that we observed the environment, the play going on and how the rooms were used. This form of preunderstanding of what the children and the teachers are discussing in the interviews and it has deepened our way of understanding what they say during interviews.

Analysis of the data

The data gathered were initially sorted into an encompassing chart that mapped the normative boundaries and hierarchies of the three preschools. When creating sketches for the provotype, the aim was also to develop new ideas and expand the thought processes of project members regarding how to improve the indoor environments in preschools. Thus, the provotype was created as an 'anti-vision' when outlining the reconstructions in the three preschools. In order to distinguish the contextualization and materialization of norms and values, this study focuses on the *boundaries* identified in the preschool premises, as outlined in the chart and converted into the provotype. These boundaries were analysed in light of previous studies on norms in preschools. The provotype as a re-representation of our analysis in the first phase of the research process was intended to be thought-provoking, provide further research ideas, and facilitate external communication.

Two main analytic processes were employed. One analytic process concerned the children's photographs and interviews, and the other concerned the teachers' interviews. At research team meetings, these analyses were discussed and deepened. During a research team meeting (including both researchers and architects), the preliminary analyses were presented by two members of the research team which led to group discussions with the research team members divided into groups. The team members had, while listening to the preliminary results, written notes on the central aspects of the results.

The notes, themes, and concepts were discussed during the workshop. These were shaped by two students of a design study programme into a first draft of provotype images. The research team then

gave feedback on this first draft, resulting in the emergence of new versions that illustrated the analytic processes. Following this, five images of an excluding preschool in terms of gender and play were created. These images were then compiled into an animated film of a provotype of an anti-including preschool.

Ethical considerations

All research in Sweden that includes people is based on the individual protection principles of the Swedish Research Council (2017). Research that in any way leads to mental or physical damage, violation, or humiliation must not be conducted. The Council also specifies the right to privacy without transparency in the personal circumstances of the individual. The Swedish Research Council (2017) also includes a research principle, which holds that research is justified for all members of society so that society can be developed and improved. The requirement calls for the use of significant research questions that are of high quality.

The provotype

The result of the process is re-represented as a 3D-animated provotype of anti-including preschool that encourages reflections on indoor environments and provides guidance for how these environments should be rebuilt. Here the provotype will be presented in different parts.

The 'Anti-including' preschool

What evolved from the analysis of the data was that different *boundaries* were part of how the indoor environments were understood by both children and teachers. These boundaries were both concrete (illustrated by doors and shelves placed at a level that children could not reach, thus creating a boundary between children and adults) and discursive (illustrated by the children referring to different areas of the preschool being used by certain children, thus creating discursive boundaries between different groups of children). Here, norms surrounding gender and age were used as analytic concepts to understand these boundaries.

These boundaries can be considered in different ways, but the analysis shows how they are maintained by a sense of *inflexibility* in relation to the aspects of everyday life in the preschools and by the creation of *power relations* between different groups in the preschools. Such groups were children / adults; girls / boys; younger children / older children; and children of different ethnicities. These divisions, part of the everyday life of the preschools, became visible in the teachers' interviews and through the photos taken by and interviews conducted with the children. These results will now be presented in three sections.

The entrance

The first part of the provotype is the entrance to the preschool. Here, the provotype shows a room with very little space, and this inflexible use of the entrance creates situations where children often have conflicts. Conflicts happen in the entrance due to the inflexibility and they can be seen as the results of power relations that are not reflected upon. In order to create an anti-including entrance, where some children have more access than others, you need to have a small amount of space, a lot of angles, and a feeling of darkness [Figures 1 and 2](#).

The playroom

Earlier research shows how children's play is supported by a room that is 'readable' and interpretable in terms of the play possibilities it offers. The analysis showed that two of the preschools had a lot of toys (too many?) and play materials, while the other preschool had a scarcity of toys and play materials. These elements create what we interpret as 'un-readable' rooms that demand that



Figure 1. Two different angles of the small, narrow entrance. Illustration: Emma Rydfjäll, Tone Hessen and Jennie Frisk.

children have high play competencies in order to get the play 'going.' The rooms are highly inflexible and seem to either direct children's activities too much and 'fix' children to a particular type of play, or then the rooms are too flexible, thus causing confusion among the children. This exaggerated flexibility can often lead to some children, particularly older children, forming a normative group that creates, decides, and the directs the play of others [Figures 3 and 4](#).



Figure 2. Two different angles of the small, narrow entrance. Illustration: Emma Rydfjäll, Tone Hessen and Jennie Frisk.



Figure 3. The 'unreadable' playroom.

Power relations

In this section, we present different aspects of power relations that the analysis shows as being linked to the indoor environments of the preschools.



Figure 4. Children who are 'fixed' to certain forms of play.

In the first example, 'Look, but do not touch', we illustrate a common phenomenon where power is established between adults and children in all three units, although said phenomenon is shared and practised in different ways. Children show interest in some activities at preschool, and in order for children to take part in this activity, the teacher plays the role of gatekeeper for that activity, thus being able to grant or refuse permission to participate. This gatekeeping is a way of establishing a power relation between the teacher and the children. [Figure 5](#) illustrates how this happens: Toys and other play materials are placed in transparent boxes that are locked. The key to the lock is placed within the children's view, but they cannot reach it. This picture comprises an example of how power relations are shaped in different communicative modes.

The second example is a playroom sign, with 'Boys,' 'Girls,' 'ADHD' (attention deficit hyperactivity disorder), 'Four-year-olds,' and 'Happy' listed beneath the signs. This provocatively illustrates that some spaces in preschools are restricted to some categories of children, and the 'sign' is a way of showing the different access children can have to places in preschools. This is further shown in the analysis, where the children spoke about their favourite places at their preschool and the teachers spoke about the use of spaces at the preschools. Some children seemed to have closed spaces and allowed only a select few to enter. Such behaviour is also an example of the power relations that can be established between children according to the category that they 'belong' to or are interpreted as being in. In a norm-creative space, such categorizations would be more open, and processes of exclusion and inclusion based on children's identities would not occur [Figure 6](#).

Our last example shows how surveillance is conducted by different actors in preschools. In the everyday life of the preschools, this is done most obviously by the teachers. The teachers control the children, where they are, and what they do. While this is part of their role as teachers, the analysis also shows a tension between the control and freedom that both children and teachers relate to. What becomes clear from the analysis is that the teachers were also controlled and under surveillance – by the principal of the preschool – in both a direct and indirect way. This is re-represented by illustrating the teacher (controller) as a puppet in the 'control room' who is also steered by somebody else (the principal), who also occupies a restricted action space [Figure 7](#).

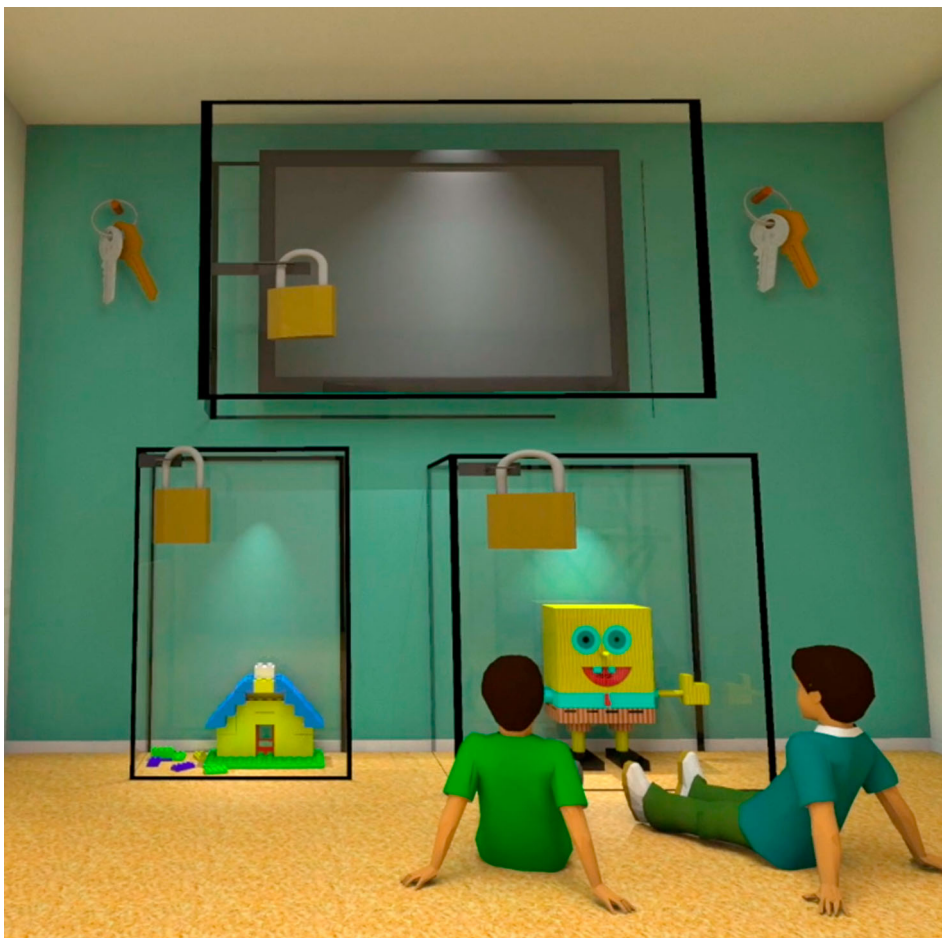


Figure 5. 'Look, but do not touch.'

Conclusions

The research questions presented at the beginning of this article focused on the provotype as an 'idea' and as a novel and concrete way of re-representing data analysis. The research questions were: In what ways can a provotype be used as a way of re-representing analysed data? How can a provotype support creative ideas in a research and development process?

The idea of a provotype was presented as a provocative product that could stimulate further discussions and thought processes in order to identify new solutions to dilemmas and challenges (Boer 2011; Mc Donnell, 2011). Both during the work with the provotype as well as afterwards we have learned that working with the 'provotyping' (what we like to call the whole process of analysing the results, visualizing, discussing the form of it and our reactions to the provotype) involves several phases of exploration and those phases includes uncertainty. The provotype was valuable in the phases of analysing the result in the way that it supported the research team's reflection over a children and teacher perspective in the action of creating it. It was a very creative way of working, and gave effective illustrations that has created several discussions in different fora since it clearly points at challenges in the preschool environment based on our research results. The provotype forced us as a research team to be very concrete and think about the play activities going on in ECEC, rather than putting this behind abstract words and theories, which a representation of an



Figure 6. An entrance for some children.

analysis can end up in. The provotype clearly helped us in the research and development project to point us what needs to be developed.

The use of the prototype was uncertain in the phase of reflection over the results with a wider group of stakeholders. We made attempts to introduce the provotype in groups that was external to the core group of researchers and stakeholders and saw early that the framing and the context was important to clearly state, in order for external stakeholders not to be too provoked. Those tendencies points at a risk of the provotype, that the staging made of the challenge in the form of a provotype might 'shade' or 'cover' the discussions on change and alterative futures. For example, preschool teachers might understand it as an image of their own pre-school, not as a representation of aspects in the anti-including preschool and take it as as critique of their work We have not showed the illustrations when there has not been enough time to discuss them, or on occasions when the group has been too big, and interaction hard to achieve.

The use of the provotype is still to be developed and tested, especially in research and development projects were new solutions need to be developed. A method of testing and developing it was



Figure 7. Surveillance by and of teachers.

writing this article and trying to find the formulations and ways of talking and communicating it. Within the research team, we found an almost physical resentment towards the anti-including pre-school of the provotype, which somehow made the provotype a underexplored artefact in the research project. The feelings that the provotype creates are the important results we see, since feelings are in some contexts underestimated as propellants of change and development. For this ongoing research, this area of the provotype is still to be explored.

A provotype might be a good way of re-illustrating, or as we put it re-representing, results from case studies with a number of different data, as in this study. But it is not only an illustration, the provotype has a potential in bringing together different communities of practices, to share and create new knowledge when it in itself is used in discussion. The 'negative' provoking side of the data embodied in the prototype makes openings, openings for different professions to reflect over the future together. Putting together ideas from different methods conducted with interview groups might be one productive way of using research creativity and forming the results in a provotype. When using a prototype there has to be an initial idea of wanting to create a critical thought concerning something in order for it to be worth the effort.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by Vinnova.

ORCID

Mia Heikkilä  <http://orcid.org/0000-0003-3361-348X>

References

- Aagaard Nielsen, K., and Svensson, L., eds. 2006. *Action Research and Participatory Research*. Maastricht: Shaker Publishing.
- Ali-Khan, C., and Siry, C., 2014. Sharing Seeing: Exploring Photo-Elicitation with Children in two Different Cultural Contexts. *Teaching and Teacher Education*, 37, 194–207.
- Andersson Schaeffer, J. 2014. *Spaces for Innovation*. Diss. Västerås: Mälardalens högskola, Västerås.
- Andersson Tengné, L., and Heikkilä, M., 2017. *Arbeta med Jämställdhet i Förskolan: Med Normmedveten Pedagogik*. Stockholm: Gothia Fortbildning AB.
- Arcia, A., et al., 2016. Sometimes More is More: Iterative Participatory Design of Infographics for Engagement of Community Members with Varying Levels of Health Literacy. *Journal of the American Medical Informatics Association*, 23 (1), 174–183. doi:10.1093/jamia/ocv079.
- Ärlemalm-Hagsér, E., and Sandberg, A., 2011. Sustainable Development in Early Childhood Education: In-Service Students' Comprehension of the Concept. *Environmental Education Research*, 17 (2), 187–200. doi: 10.1080/13504622.2010.522704.
- Boer, L. 2011. "Participatory Provocation? In: J Buur, ed. *Participatory innovation conference*, PINC 2011. Proceedings, 21–26.
- Börjesson, P., et al. 2015. "Designing Technology for and with Developmentally Diverse Children." In IDC '15: *Proceedings of the 14th international conference on interaction design and children* Proceedings of the 14th International Conference on Interaction Design and Children, June 2015, 79–88. doi:10.1145/2771839.2771848.
- Broström, S., Herring, H., and Nellemann Nielsen, S., 2015. *Liv och Lärande i den Tidiga Förskolan: Målinriktad Pedagogisk Verksamhet med 0-3-åringar*. Lund: Studentlitteratur.
- Bryman, A., 2011. *Samhällsvetenskapliga Metoder*. Malmö: Liber.
- Burke, C., 2005. "Play in Focus": Children Researching Their Own Spaces and Places for Play. *Children, Youth and Environments*, 15 (1), 27–53.
- Clark, A., 2010. *Transforming Children's Spaces: Children's and Adults' Participation in Designing Learning Environments*. New York: Routledge.
- Coghlan, D., and Brydon-Miller, M., 2014. *The SAGE Encyclopaedia of Action Research*. Thousand Oaks, CA: SAGE Publications.
- Davies, B., 1989/2003. *Frogs and Snails and Feminist Tales: Preschool Children and Gender*. Cresskill, NJ: Hampton Press.
- Davies, B., 2014. *Listening to Children. Being and Becoming*. London & New York: Routledge.
- De Jong, M., 2010. "Förskolans Fysiska Miljö." In: B. Riddersporre, and S Persson, eds. *Utbildningsvetenskap i Förskolan*. Stockholm: Natur och Kultur, 253–274.
- Ehrnberger, K., 2017. *TILLBLIVELSE: En Trasslig Berättelse om Design som Normkritisk Praktik*. Diss., Stockholm: KTH Royal Institute of Technology.
- Ehrnberger, K., Räsänen, M., and Ilstedt, S., 2012. Visualising Gender Norms in Design: Meet the Mega Hurricane Mixer and the Drill Dolphia. *International Journal of Design*, 6 (3), 85–98.
- Eidevald, C. 2009. *Det finns inga tjejbestämmare - Att förstå kön som position i förskolans vardagsrutiner och lek*. Jönköping: Jönköpings universitet.
- Epstein, I., et al., 2006. Photo Elicitation Interview (PEI): Using Photos to Elicit Children's Perspectives. *International Journal of Qualitative Methods*, 5 (3), 1–11.
- Eriksson Bergström, S. 2013. *Rum, Barn och Pedagoger: Om Möjligheter och Begränsningar i Förskolans Fysiska Miljö*. Diss. Umeå: Umeå universitet, Umeå.
- Francis, B., 2010. Re/Theorising Gender: Female Masculinity and Male Femininity in the Classroom? *Gender and Education*, 22 (5), 477–490.
- Hartnell-Young, E., and Fisher, T., 2007. *Circling the Square; six Activities for Listening to Teachers and Students*. Nottingham, UK: Learning Sciences Research Institute and School of Education, University of Nottingham.
- Heikkilä, M. 2016. *Children's Gendered Play and Toys at Preschool*. In: Patte, M and Sutterby, ed. *Celebrating 40 Years of Play Research. Play & Culture Studies Connecting Our Past, Present, and Future*, 13.
- Heikkilä, M., et al., 2020. *Rum i Förskolan för Barns lek och Lärande*. Stockholm: Natur och Kultur.
- Hellman, A., 2010. *Kan Batman Vara Rosa? Förhandlingar om Pojkighet och Normalitet på en Förskola*. Diss. Göteborg: Göteborgs universitet.
- Hohti, R., and Karlsson, L., 2014. Lollipop Stories: Listening to Children's Voices in the Classroom and Narrative Ethnographical Research. *Childhood (copenhagen, Denmark)*, 21 (4), 548–562. doi:10.1177/0907568213496655.
- Knutsdotter Olofsson, B., 2017. *Den Fria Lekens Pedagogik: Teori och Praktik om Fantasileken*. Stockholm: Liber.
- Koralek, B., and Mitchell, M., 2005. The Schools We'd Like: Young People's Participation in Architecture. In: M. Dudek, ed. *Children's Spaces*. Oxford: Elsevier, 114–153.
- Kress, G.R., 2003. *Literacy in the new Media age*. London: Routledge.

- Larsen, H.S., and Hedvall, P.O. 2012. "Ideation and Ability." In *PDC '12: Proceedings of the 12th Participatory Design Conference: Exploratory Papers, Workshop Descriptions, Industry Cases- Volume 2* August 2012, 37–40. doi:[10.1145/2348144.2348157](https://doi.org/10.1145/2348144.2348157).
- Lindberg, M., Heikkilä, M., and Andersson Schaeffer, J., 2018. Socially Innovative Reconstruction of Preschool Premises. *European Public & Social Innovation Review*, 3 (2), 1–13.
- Literat, I., 2013. "A Pencil for Your Thoughts": Participatory Drawing as a Visual Research Method with Children and Youth. *International Journal of Qualitative Methods*, 12 (1), 84–98.
- MacNaughton, G., 2000. *Rethinking Gender in Early Childhood Education*. London: Chapman.
- Magnusson, L., 2017. *Håller den Svenska Modellen?: Arbete och Velfärd i en Globaliserad Värld. (3rd ed)*. Lund: Studentlitteratur.
- Mc Donnell, J. 2011. "A cost of relevance preferences during post-prototype deployment interviews." Buur, J (ed.) *Participatory innovation conference*, PINC 2011. Proceedings. 27–31.
- Mogensen, P.H., 1992. Towards a Prototyping Approach in Systems Development. *Scandinavian Journal of Information Systems*, 4, 31–53.
- National Agency for Education. 2021. Barn och Personal i Förskola 2020 (Children and Personnel in Preschool 2020). Beskrivande Statistik, dnr. 2021:435. https://sirisskolverket.se/siris/sitevision_doc.getFile?p_id=550786 Stockholm: National agency for Education
- National Agency of Education. 2019. Curriculum for the Preschool, Lpfö 18, <https://www.skolverket.se/publikationsserier/styrdokument/2019/curriculum-for-the-preschool-lpfo-18?id=4049>.
- Olsson, M., and Lindgren, A.-L., 2019. The Role of Digital Cameras in Child and Researcher Encounters in Preschool. *Video Journal of Education and Pedagogy*, 4 (1), 99–115. doi:[10.1163/23644583-00401004](https://doi.org/10.1163/23644583-00401004).
- Paechter, C.F., 2007. *Being Boys, Being Girls: Learning Masculinities and Femininities*. Maidenhead: Open University Press.
- Pyle, A., 2013. Engaging Young Children in Research Through Photo Elicitation. *Early Child Development and Care*, 183 (11), 1544–1558.
- Rasmussen, K., 2004. Places for Children – Children's Places. *Childhood (copenhagen, Denmark)*, 11 (2), 155–173.
- Reason, P., and Bradbury, H., 2008. *The Sage Handbook of Action Research: Participative Inquiry and Practice*. 2nd ed. London: Sage.
- Sandberg, A., and Pramling-Samuelsson, I., 2005. An Interview Study of Gender Difference in Preschool Teachers' Attitudes Toward Children's Play. *Early Childhood Education Journal*, 32 (5), 297–305.
- Segelström, F., Rajmakers, B., and Holmlid, S., 2009. Thinking and Doing Ethnography in Service Design. *IASDR, Rigor and Relevance in Design*. Seoul.
- Seland, M., 2012. Barnehagens nye rom Sett i lys av Diskurser om Livslang Laering. In: Krogstad, GK Hansen, K Høyland, and T. Moser, eds. *Rom for Barnehage*. Bergen: Fagbokforlaget, 115–128.
- Serbin, L.A., et al., 2001. Gender Stereotyping in Infancy: Visual Preferences for and Knowledge of Gender-Stereotyped Toys in the Second Year. *International Journal of Behavioral Development*, 25 (1), 7–15.
- Sutton-Smith, B., 1987. *The Ambiguity of Play*. Cambridge: Mass.: Harvard Univ. Press.
- Swedish Research Council, 2017. *Research Ethics and Artistic Freedom in Artistic Research*. Stockholm: Swedish Research Council.
- Swedish Schools Inspectorate. 2017. Förskolans Arbete med Jämställdhet. (The Preschools's Wrok on Gender Equality). Dnr: 400-2015:6591. <https://www.skolinspektionen.se/beslut-rapporter-statistik/publikationer/kvalitetsgranskning/2017/forskolans-arbete-med-jamstalldhet/>.
- Woolner, P., et al., 2010. Pictures are Necessary but not Sufficient: Using a Range of Visual Methods to Engage Users About School Design. *Learning Environments Research*, 13 (1), 1–22.
- Yin, R.K., 2009. *Case Study Research: Design and Methods*. London: SAGE.
- Yndigegn, S.L., and Foverskov, M. 2011. Props to Evoke 'The New' by Staging the Everyday Into Future Scenarios. In: J. Buur, ed. *Participatory Innovation Conference*, PINC 2011. Proceedings, 105–110.