MASTER THESIS | PLAY ON YOUR WAY

Researching and developing play route concepts for children in the public space.

Master Thesis

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January 2013

Delft University of Technology

Faculty of Industrial Design Engineering

Master Design for Interaction

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ABSTRACT

This thesis presents the graduation project 'Play on Your Way', in which play route concepts have been researched and designed by using child participation. The project was committed by the National Youth Fund Jantje Beton, who aims to create and retain a public space where children (age 6-12) feel free and encouraged to play and be active in. They do this by devising, financing and organizing projects that contribute to reaching this goal.

Project scope

A problem with current projects is that most ideas are generated from an adults point of view, and therefore do not meet with the wishes of children. The project's scope is to design play concepts for the public space, starting with thoroughly researching what the target group wants and needs and including them in the process. This way, an example can be set for the approach of generating solutions for play opportunities in the future. Play routes were chosen as an example case. Shortly put, a play route is a route with play elements, enabling children to play (safely) on their way from point A to B.

Analysis

First of all, the project scope was specified further by researching for which age group and type of location the public space is least accessible and encouraging for play. It was found that children in grade 3-5 (about 6-8 years old) and living in urban areas face the most restrictions when it comes down to playing in the public space or getting somewhere.

Next, a short literature study on the target group's characteristics and behaviour was done, giving some insight in what the target group is like and how to execute research with them. The target location was analysed further as well, which made clear that the most urban areas of the 5 most urbanized municipalities of the Netherlands mainly exist of 'urban, stacked residential streets'. This concluded in a list (and examples) of characteristics of this type of street that could be important in the design phase.

Finally, the rules and regulations for play elements were analysed to get familiar with the basic restrictions for designs.

Research

The research phase was where the child participation mainly took place. To find out what the experiences and wishes of the target group are concerning the public space (focussing on routes and playing), contextmapping and co-research was executed.

During the contextmapping, 20 children of the target group filled in a sensitizing booklet with short assignments about routes and playing, and 15 children (groups of 3) participated in generative sessions about these topics. Five couples participated in the co-research, where the children walked a route of their choice and made assignments on their way.

General conclusions about playing were for example that the target group likes competition/challenges, climbing/clambering, games like tag, hide and seek and hopscotch, and playing together. The most common route is from home to school and back, followed by routes to friends, sports, music lessons, playgrounds/parks and the swimming pool. Nature and art is liked on a route, and traffic and vehicles are associated most often with negative experiences. Some children already play along these routes (for example by doing a bicycle race).

The specific examples that came out of the research were clustered into inspiration sheets. These quotes, drawings or pictures appeal to one's imagination much stronger than a general list of conclusions, and make child participation such a powerful method.

Design

In the design phase, ideas were generated from the inspiration sheets (backed up by the general conclusions and findings of the analysis phase). Since the inspiration data was not clustered yet when the very first ideas were generated, these ideas were more often based on general conclusions than on unique remarks of children. It became very clear that the remarks gave much more inspiration than the general conclusions, and thus what the use of child participation can be. In the end, about 25 ideas were documented as examples of the project's output.

A range of the ideas was evaluated by a group of the children that participated in the research, and some adults. This showed that the children felt connected with the ideas and both the children as the adults were enthusiast about most of them. The evaluation also resulted in some suggestions concerning function, safety, appearance and maintenance that should be taken into account when developing the ideas further.

Tool

To make sure that Jantje Beton can communicate the process and results of this project as an example of why child participation should be used more often, a tool was made. The tool is a fan with 17 sheets, summarizing the process step by step. A general explanation is presented on the front side of each sheet, with a specific example of this project on the back. The tool is mainly meant to inspire and enthuse municipalities to apply child participation more often. An evaluation took place with two adults with little to no experience of child participation. It showed that the information was clearly put and the fan inspired and enthused the readers with the presented examples and possibilities of child participation.

Recommendations

The tool that resulted of this project is a way to make municipalities enthused about child participation, but more information and training should be provided before they can actually get busy. It is recommended that the tool is completed with a range of workshops, or a program for setting up and executing child participation.

Additionally, the tool is now based on only one example project. For the tool itself this is not necessarily a problem, but more examples should be documented to show in general that child participation works. Lastly, testing the ideas in practice will give additional insights in the results of using child participation, and shows where this method still needs improvement.

By Marlies Bouman | studentnr. 1304771 | Industrial Design Engineering, TU Delft

PREFACE

This thesis is the result of my graduation project 'Play on Your Way' in which I used child participation to design play routes for the public space. But even though you will indeed find design ideas for play routes in this thesis, the most important result of the project is - in my opinion - the inspirational tool that should enthuse others to apply child participation in their own projects.

You might think that you know what children want for you were once a child too, or because you have children, or work with children. Of course this is true to a certain extent, but I am convinced you will be amazed by the things you will learn when actively involving children in a design process.

I had never done a design project with children before, hence I was not sure what to expect of making them the key to my designs. Not only did I gain a lot of inspiration and knowledge on the target group's experiences and wishes, I also found how much fun child participation can be for both the children as the designer. I was definitely surprised by the value of the data that came out of the research, and learned that especially the specific quotes and drawings from the participants result in ideas that the target group likes. Of course, these ideas are backed up by the general conclusions and the evaluation with the target group and adults afterwards.

After reading this report and the inspirational tool, I hope you will understand the benefits of actually getting to know the target group before starting to generate ideas for them. Letting children participate in your design process will amaze you, inspire you and will result in finding the solutions that your target group actually needs.

ACKNOWLEDGEMENTS

First of all I want to express my gratitude to all three members of my supervisory team. Mathieu Gielen, thank you for your clear feedback, knowledge and inspiring vision on my work. Fenne van Doorn, thank you for always making time when I needed input, your positive feedback and your fresh ideas. Rob van Gaal, thank you for sharing your experience, enthusiasm and expression of faith in my work.

I would also like to thank Anne Koning, Malou Durve, and Tijs den Uijl for sharing their insights on child participation and information about projects of Jantje Beton.

To all the children that participated in my research: I could not have done this project without you! Without your sincere and creative input during the contextmapping sessions and co-research I would not have been able to come to these design solutions. Special thanks to 'groep Groen' and their enthusiastic teacher Hannie Bos from 'de Delftsche Montessorischool', Mette Tomberg and Albert van de Pluym from the child care facility 'de Lange Keizer' and Anneloes van de Graaff from 'de Jan Vermeerschool'.

Furthermore I would like to express my word of thanks to my family, friends and roommates for providing the necessary feedback, distraction and relaxation, and last but not least I want to thank Rudo for his unconditional support, encouraging words and care.

With appreciation,

Marlies Bouman
22 January 2013

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1. INTRODUCTION | Introduction of the graduation assignment and thesis

This chapter introduces Jantje Beton, the initiator of this graduation project, and describes the background of the chosen topic. This is followed by an introduction of the setup of this thesis.

1.1. Jantje Beton

The main goal of the National Youth Fund Jantje Beton is to create and retain a public space in which children (age 6-12) feel free and encouraged to play and be active. They do this by devising, financing and organizing projects that contribute to reaching this goal.

"Playing in the public space is important in the lives of children. For most of the children, playing in the public space can be found in their top 3 of favourite things to do. It is the place where they can meet friends, run around and feel free." (Jantje Beton)

1.1.1. The problem with the public space

The problem that Jantje Beton tries to solve is satisfying the need for public spaces where children feel free and encouraged to play and be active in. Although the organisation was founded quite some time ago (1968) and a lot has changed since then in terms of the living environment, the play opportunities, and the types of play, this problem still exists.

1.1.2. The problem with current solutions

The problem is not necessarily that nobody tries to create play opportunities in the public space. The question is if these play opportunities enable and encourage children to play outside. Solutions are often generated from an adult's point of view: children should be stimulated to be active outside (health issues) and the streets should be made less dangerous (safety issues). Children might acknowledge these issues to some extent, but it is assumable that a child experiences other issues as the most problematic. Hence, it is likely that the problem will not be solved by only looking at the issues that adults encounter.

Additionally, children might have ideas about possible solutions, which have not been taken into account so far. In order to cover the entire set of issues and possibilities when coming up with solutions to make the public space more accessible for playing, the child's perspective has to be taken into account.

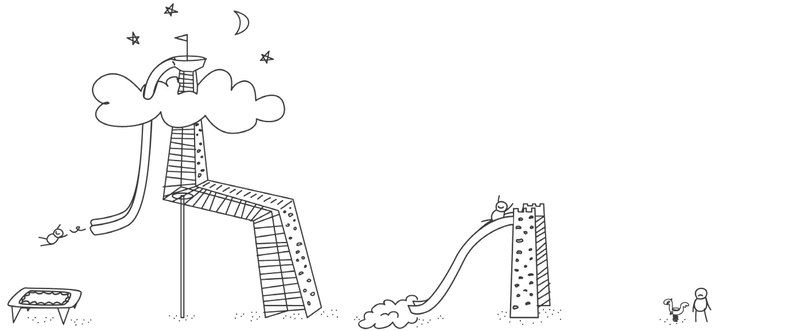


Fig. 1.1. - *Visualization of the problem with current solutions*

1.2. Project Scope

The project's scope is to design play concepts for the public space, starting with thoroughly researching what the target group wants and needs. This way, an example can be set for the approach of generating solutions for play opportunities in the future. To do this, 'play routes' are chosen as test case.

1.2.1. Play routes

One of the ideas that Jantje Beton is developing and working with at this point is the 'play route', where play elements are placed on a certain route and children can play (safely) on their way from point A to B. The advantage of a play route over a playground is that the playing is made part of 'getting somewhere'

and thereby part of a daily pattern: it can evoke playing while getting from house to school, or from school to the park, the gym, the shop etc. Besides that, a play route can guide children to places that are suitable to play at but are not used for this purpose right now, or guide them through safer streets and to safer crossings.

Some play routes have been implemented in the Netherlands already, though not all as successful as expected. It is presumed by Jantje Beton that this has to do with the lack of research about what the target group actually wants and needs in a play route. Because the play routes are still in development and there is little research about this topic so far, the play route makes a good topic for this graduation assignment.

1.3. Thesis Setup

The setup of this thesis can best be described schematically, see Fig. 1.2. The main goal of the project is to research the topic of play routes from the target group's point of view, and design concepts for play routes. There are however a number of steps that have to be carried out in order to do this.

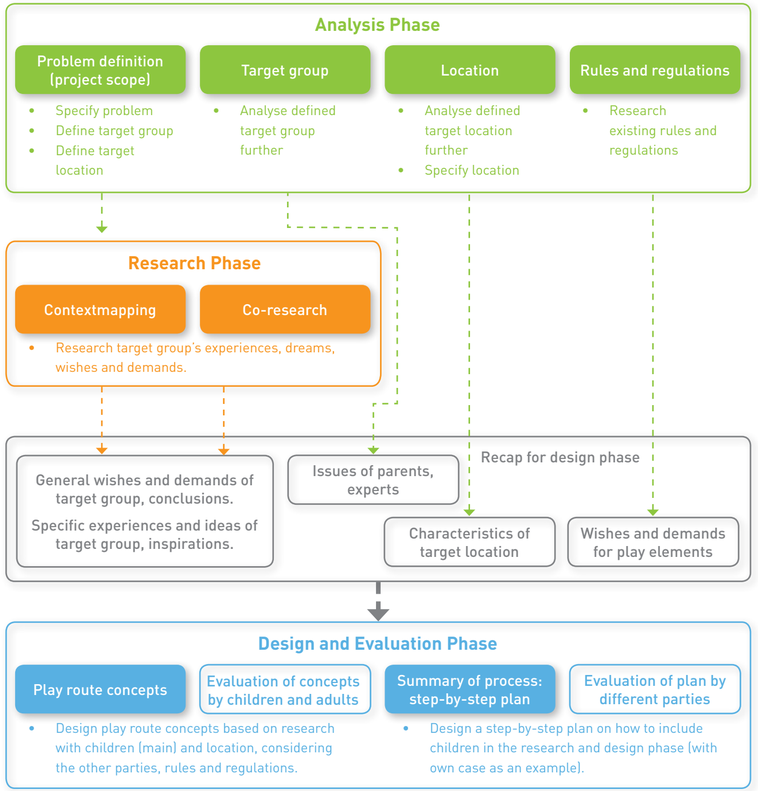


Fig. 1.2. - *Scheme of thesis setup*

1.3.1. Analysis phase

First of all, the target group and project scope have to be defined further. The target group for now is just 'children age 6-12' (same as the target group of Jantje Beton) and the scope is not specific enough to set up a research. Literature and existing research about and with children should give enough insights to further specify the target group and target location.

After this, the redefined target group can be analysed: what is known about their (playing) behaviour? By gathering more information about the target location, characteristics can be found that can help in the research and design phases.

The last part of the analysis phase is the analysis of the rules and regulations for play elements. What restrictions are there when designing? These have to be taken into account when designing, but can also be useful to keep in mind during the research phase.

1.3.2. Research phase

The second part of this thesis describes the research phase. The phase starts with the setup of the research and the research questions (that can partially be derived from the analysis phase). The research is split up in two parts: contextmapping and co-research. The contextmapping part is again divided into a sensitizing part and a generative part.

The results of the research phase are also two-sided: on the one hand there are the rather general conclusions, representing the target groups basic problems, wishes, and demands. On the other hand there are specific examples given by (groups of) children participating in the research, making inspiring starting points for the design phase. Both will be presented in the research phase chapter.

1.3.3. Design and evaluation phase

After shortly recapping the previous phases, the design phase is described. First, the design setup and structure of the design process will be presented. This is followed by the (chosen) design concepts, and evaluation of the concepts. The evaluation will be conducted with children and adults.

1.3.4. Step-by-step plan

Since the entire process was a test case for how to include the child's point of view during the research and design phase, the insights on the methods need to be documented for later use. Therefore a step-by-step plan is presented, showing how children can be involved in future play-design-projects. Jantje Beton can use this as a tool for enthusing (for instance) municipalities for child participation. The test case is used as an example in this tool.

1.3.5. Other chapters

The thesis concludes with a chapter with conclusions and recommendations. However, a personal reflection is added at the very end, to share some valuable thoughts on the process and used research methods. Since this is more about personal findings, it was not made part of the actual thesis.

Besides this thesis...

The thesis itself is completed with a set of appendices. It is delivered separately from this thesis, on paper as well as on a compact disc.

As described in the thesis and appendices, a tool was made for Jantje Beton as a result of the project. This tool, in the shape of a fan, is also delivered separately.

Lastly, a poster (A1) and a couple of images that represent the project were made. These are included on the compact disc.

2. ANALYSIS PHASE | Analysis and specification of the problem definition and target group

The analysis phase consists of roughly four parts: the problem analysis/redefinition, the target group analysis, the location analysis, and the play element (rules/regulations) analysis.

All four will shortly be introduced, which is followed by a summary of the findings, a discussion of these findings and finally the conclusion.

2.1. Problem Analysis

The problem analysis focuses on deepening the problem definition and gaining more insight in the topic of this graduation project. Literature was consulted to find out what is known already about children and playing in the public space, what kind of playing is popular, where children play and so on.

2.1.1. Method

Prior to consulting available literature, a set of in-depth questions was formulated. Finding answers to these questions should conclude in a further defined problem definition and a more specific description of the target group, considering for example age-range, environment and gender.

2.1.2. Main questions

The questions that were formulated as guidelines for the analysis are listed below:

1. What is known about children and playing in de public space, focussing on:
   - 1.1. What kind of playing in the public space do children do and like?
   - 1.2. What kind of attributes do children use for playing in the public space? Which are not used for playing and why?
   - 1.3. Where do children play, and what places are most popular?
   - 1.4. Which moments (moment of the day, day of the week, season) are most popular for playing in the public space, and which are least popular?
   - 1.5. What attracts children to play in the public space?
   - 1.6. What is the average duration (e.g. per day) of playing outside of different age-groups and genders, and what is the desired duration?
   - 1.7. Which differences exist in the intensity (activity) of playing between different age-groups and genders?
   - 1.8. Until what age are parents involved in the duration and intensity of playing in the public space?
2. What is known about the reasons for children not to play in the public space, focussing on:
   - 2.1. Which reasons do children give for (not) playing in the public space?
   - 2.2. Which reasons do adults (parents, teachers etc.) give for why children do or do not play in the public space?
3. What needs to be taken into account when developing play routes, in terms of:
   - 3.1. Way/intensity of playing (what kind of activity adds to the children's development, how active are children usually while playing outside etc.)?
   - 3.2. Safety standards and regulations?
   - 3.3. The environment/neighbourhood?
   - 3.4. ... (other)?

2.1.3. Findings

The findings were summarized according to a number of 'themes'. The full summary can be found in Appendix A. In the summary presented below, only the major findings are included.

Play activities

Found studies about the type of play activities, used as input for this analysis, are:

- A survey by TNS Nipo, among 616 children (age 6-12) and 554 parents living in the Netherlands (Snel, 2010);
- A contextmapping research with children, executed by a graduating student from the TU Delft (Lauwerier, 2009);
- A focus group by TNO, among 227 children (age 6-12) in the Netherlands (Bakker, Vries et al., 2008).

The studies do not fully agree on what outdoor play activity is liked most, and which make second and third place. However, all studies mention climbing and clambering, 'traditional games' like hide & seek, tag or hopscotch, and field/ball games such as football.

Other games that were mentioned are cycling, made-up games, the swing, building huts, skating, and playing on a playground.

Locations of outside play

The theme 'locations of outside play' covers the type of location, the condition of these locations and the position of these locations compared to for instance the home of the children. This last topic is party placed under the theme 'restrictions'.

In addition to the studies mentioned earlier, the following literature was found about the location of outside play:

- A survey by Qrius, among 435 children (age 6-11) living in the Netherlands (Qrius, 2010);
- A book by Tovey, "Playing in the Outdoors" (2007).

Type

The schoolyard and the own neighbourhood of the children seem to be the most popular locations for playing outside. The playground is visited less frequently, but is also still quite popular among particularly the younger children (6-8). The older share (9-12) rather plays on a grass field than on a playground (Snel, 2010; Qrius, 2010).

The children that participated in the context-mapping sessions by Lauwerier (2010) lived in a quite thinly populated area. It is interesting to see that the type of play is slightly different than in all other studies: the street, playgrounds and lawns are common places for play.

Something to consider in further research was described in the book 'Playing Outdoors' by Tovey (2007). In the book, the natural environment was compared with 'manufactured' playgrounds:

"When they have a choice it appears that children prefer natural environments to play in (Moore 1986; Titman 1994). Armitage (1999) researched children's perceptions of playgrounds in Hull and found that while equipment initially attracted children to playgrounds it was the natural features, such as grass, flowers, trees, shrubs, bushes and trees, which children rated highly and sustained the play for longer."

This indicates that children that live in greener neighbourhoods have an advantage over children living in stony neighbourhoods.

Condition

Only a couple of fragments were found about the conditions of play locations (Snel, 2010):

- A playground should be clean and tidy;
- A rainproof play location is desired;
- About three-quarters of the parents and children say to be willing to do something for keeping the play areas in neighbourhood nice and clean.

Position

Most of the children participating in the study by TNO lived within a radius of approximately 300-400m from the playground they visited. Barriers like water, busy traffic or railroads on the route to the playground influence this radius negatively (Bakker, Vries et al., 2008).

The walking/cycling radius of children might also be dependant on the type of streets the children

live in. Foreign studies showed that a grid of streets resulted in more active transportation than cul-the-sacs. Cul-the-sacs do not promote active movement because they often have a dead end, but offer more safety while playing (Holt, Spence et al. 2008; Veitch, Bagley et al. 2006).

Frequency and duration of outside play

Previous studies show that playing outside is more popular than playing inside, and that most of the children play outside as often as they would like. In general, only a few say they would rather play outside less frequently, and about one fifth of the children would like to play outside more often. The study by TNS Nipo showed that younger children (age 6-8) more often indicate that they would like to play outside more often than children age 9-12, but that children from (very) urban areas most frequently (29%) state that they would like to play outside more.

Although playing outside was found to be more popular than playing inside, most children play outside as frequently as inside, or even play inside more often than outside. A little less than one fifth plays outside more often than inside. The study by

TNS Nipo shows that children from a high social class play inside more often (54%) than children from a low social class (32%). More than 75% of the children participating in this study plays outside 2 times a week or more.

As expected, the TNO focus group interviews showed that children come to the researched playgrounds more often during the summer than during the winter. The difference is not that striking though: in summer they come at least a few times a week, and in winter about once or a few times a week. Most of the times, the duration of the visit is longer than one hour and takes place after school (16.30 - 17.30), on Sunday and in the evening. Not all children have enough time during the lunch break, and/or the researched playgrounds are not located on the route between their houses and schools. Parents often ask their children to be home 'before it's dark' or at a certain time (varies between 4 and 10 PM).

What makes playing outside fun?

Most studies showed that playing together with friends is one of the best parts of playing outside. Besides this, the results differed from 'just running around' (more often liked by children age 6-8), 'room for imagination', 'challenge', and 'competition' as factors of what made playing outside fun.

About 80% of the children in the TNS Nipo study agrees that they feel happy and cheerful after they played outside for a while. About 40% agrees that they feel strong and healthy after playing outside a while.

What would make playing outside more fun?

The studies by Qrius and TNS Nipo asked what would make playing outside even more fun. The results show that parents and children find current playgrounds and sidewalks too boring, and children wish for more playgrounds or climbing bars, more children to play with, and more things for their age (6-8 and 9-12). Less traffic in the neighbourhood, less dog dirt, and more squares and grass fields were also mentioned by a many children.

A large share of the children agreed that they would play outside more often if there would be nicer play opportunities in their neighbourhood. Children in the western part of the Netherlands agree more often with this than children from the East (81% vs. 70%). Children from (very) urban areas find the playgrounds and sidewalks in their neighbourhood boring more often than children from less urban areas. Also, children from the western part of the Netherlands more often mention that playing outside should be less boring compared to children from the South (21% vs. 9%).

The problem of play equipment being designed for younger children also came forward in the Australian study by Veitch, Bagley et al. (2006), where half of the parents raised concerns about play equipment in playgrounds or parks. The most common complaint was that play equipment was designed for toddlers and younger children, and older children found parks boring because there was no equipment that appealed to them.

Gender differences in play activity/style

The studies that were described earlier did not research the differences in play activity/style between genders. Therefore, more literature was consulted:

- A paper from Harten, Olds et al. (2008) compares different studies about this topic, after which they conduct their own study with Australian children age 8-11.

The paper describes that studies have consistently found boys to be more active than girls, boys rely more on space-using standardized games such as football, and they occupy more space than girls during free play. They are more competitive and exclusive, play in large groups, and good players tend to dominate. Girls tend to be more inclusive and co-operative, and play passive, small-group games which use less space. Adair (1992) suggests that boys learn to feel more at ease with their bodies and take up more space, while girls tend to shrink and enclose themselves. The results from the study of Harten, Olds et al. (2008) corresponded with the findings from the literature, as did the interviews that Lauwerier conducted with staff members of schools.

Lauwerier also found that boys and girls often play together, however children reaching the oldest side of the target group play less and less with the other sex. The experts (an alderman, pedagogue/education counsellor/location manager of a child care facility/ teacher) Lauwerier interviewed emphasized on the differences between individuals instead of sexes. One of the experts however mentioned that boys are more focused on physical games whereas girls prefer social games.

Age differences in play activity/style

Several age differences have been described through the other themes already. Although some other differences have been found in literature, none of these were very important for redefining the problem definition. More attention should be paid to the development stage of the further defined target group in the target group analysis.

Restrictions

Different studies asked parents and children about the restrictions in outside play. The findings can be split up in different parts:

Supervision

TNS Nipo asked parents and children about supervision when being outside. Age plays an important part in the amount of supervision that a child 'needs' when playing outside. For the ages 6-8, about 70% is always allowed to play outside without supervision, while this percentage is over 90% for ages 9-12. The type of neighbourhood is also a relevant factor: children in (very) urban areas are allowed to play outside without supervision less often. 3% of the children is not allowed to play outside without the supervision of an adult at all.

When walking/cycling to school alone, the differences are even more extreme: less than one third of the 6-8 year olds can walk/cycle to school alone, against 85% of the 9-12 year olds. The percentages are again slightly lower in (very) urban areas.

The most important reasons why children are not allowed to play without supervision are safety (roads and traffic) and because parents think their children are still too young.

More than half of the parents state that they would more often allow their children to play outside alone if there were safer routes to play areas (55%), and almost half of the parents state that they would more often allow their children to walk/ cycle to school alone if there were safer routes (47%).

Accessibility

Traffic is the number one problem (especially for 6-8 year olds) for reaching a nice play area or a friend's house according to children. The experts Lauwerier interviewed were more negative about the opportunity for outdoor play than parents and children. They mention safety concerns as the main reason. Another aspect is the limited amount of formal play areas. Children therefore frequently play at informal areas, which are often very small:

"Think about little patches of grass and squares between houses."

Other factors

Children said what holds them back from playing outside in different studies. The presence of older children, bullying and rain are often mentioned. Also the absence of playmates keeps children from playing outside. Lauwerier found that having to wait too long for a turn, or when it takes too long to start a game, negatively influences the fun of playing.

2.1.4. Discussion

In the introduction of this thesis the first part of the problem definition was described as "there is a need for public spaces where children feel free and encouraged to play and be active in."

After the literature research the parts 'public space' and 'children' can be narrowed down to some extent, focusing on the target group for which the described problem is most urgent. This discussion mainly focuses on the location and age of the children.

Urban areas

In the literature study, urban areas come forward as problem areas in a couple of ways. Children in (very) urban areas more frequently indicate:

- that they would like to play outside more often;
- that the sidewalks/squares are too boring;
- that they would like to have more squares/grass fields;
- that they are not allowed to play outside without supervision (parents confirm this);
- that they are not allowed to walk/cycle to school without supervision (parents confirm this);
- that they are not allowed to go to a nice play area (parents confirm this).

After checking with TNS Nipo (the institute that conducted the research in which most of the statements about urban areas were found), it appeared that they use the definition of 'Statistics Netherlands' (CBS) for urbanization. CBS bases its definition on the 'surrounding address density' (hereafter abbreviated to SAD):

Definition of an 'urban area':

CBS uses the following definition to define an area as an 'urban area': "A grid of 500 by 500 metres is considered to be an urbanised area when the surrounding address density is 1,500 or more per square kilometre in the grid." Besides that, CBS defined five degrees of urbanisation:

The classification of surrounding address density based on five categories:

1. Extremely urbanized:
   2,500 addresses or more per km^2;
2. Strongly urbanized:
   1,500 to 2,000 addresses per km^2;
3. Moderately urbanized:
   1,000 to 1,500 addresses per km^2;
4. Hardly urbanized:
   500 to 1,000 addresses per km^2;
5. Not urbanized:
   fewer than 500 addresses per km^2.

www.cbs.nl

Additionally, it was found that children from the western part of the Netherlands more often agree with the statement "If there would be nicer play elements/options in my neighbourhood, I would play outside more often." (than children from the East) and more often mention that playing outside should be less boring (compared to children from the South). Although the average SAD is not the only difference between the East, South and West of the Netherlands, it is interesting to see that the average SAD is higher in the western part of the Netherlands (see Fig. 2.1).

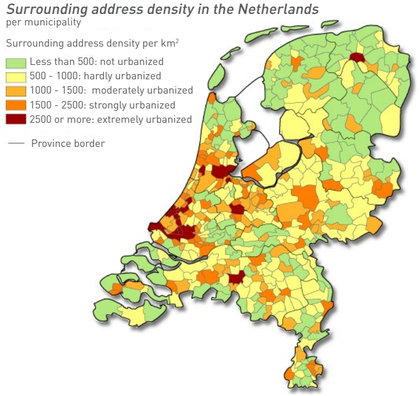


Fig. 2.1. - *SAD in the Netherlands (CBS Statline, 2009)*

Barriers like water, busy traffic or railroads on the route to the playground are mentioned to be an important factor in the size of the 'radius' from which a play area attracts children. The more barriers there are, the smaller the radius.

Lack of (exiting) places to play and restrictions in freedom of movement (mostly due to roads and traffic) seem to be the biggest barriers for free and fun outside play in (highly) urbanized areas. Therefore, the 'public space', as described in the problem definition, can be narrowed down to these areas.

Examples of extremely urbanized areas are some neighbourhoods in big cities like Amsterdam, Rotterdam and the Hague, but also areas in cities like Delft, Leiden, Groningen etc. (dark red areas in Fig. 2.1). The figure can be a starting point for choosing a research area, but it has to be taken into account that not every neighbourhood of a 'red-coloured area' is extremely urbanized, and there might be extremely urbanized neighbourhoods in less urbanized municipalities. Additionally, not all of these areas are the same: the SAD in a city centre can be just high as in a high-rise neighbourhood, but both are arranged completely different. In the further location analysis, these differences need to be considered.

Age

In most of the studies, a separation was made between the ages 6-8 and 9-12. Although many of the findings were similar for the different age-groups, some relevant differences were found.

Children ages 6-8 more frequently say that:

- they would like to play outside more often;
- they are not allowed to play outside without supervision (parents confirm this);
- they are not allowed to walk/cycle to school without supervision (parents confirm this);
- they are not allowed to go to a nice play area (parents confirm this);

Children between the ages 9-12 more often state that the play areas in the neighbourhood are too boring. Although the different studies show different results on what this age group prefers as play area/activities, it seems that more exiting play elements and more space (grass fields/squares) are wanted.

Both age groups state that they would like to have more play elements for their age group. On the one hand this indicates that there simply are too little play elements for both age groups; on the other hand this could indicate that the children have the feeling that there are more elements for the 'other age groups'.

Even though there seems to be "a need for public spaces where children feel free and encouraged to play and be active in" for both age groups, the play route idea suits best with the age group 6-8 considering the mobility issues.

As described before, more than half of the parents participating in one of the studies state that they would more often allow their children to play outside alone if there were safer routes to play areas (55%), and almost half of the parents state that they would more often allow their children to walk/cycle to school alone if there were safer routes (47%).

Of course this has to be researched more thoroughly, but the play routes could make the streets more accessible by providing safer routes. The question of how these play routes should be implemented, and on which routes exactly, remains. Important is to first of all look at the children's wishes and demands. Nevertheless, it was found that the parents' point of view is an important factor in the freedom of movement of the children.

2.1.5. Conclusions

The problem definition and target group can be redefined as: There is a need for public spaces where children feel free and encouraged to play and be active in. This problem is most striking in the (very) urban areas of the Netherlands. The encouragement through more exiting play areas is needed for many of the children age 6-12. The need for freedom of movement in the public space is however most striking for the children in the age range 6-8.

The starting point of this graduation project was the play route idea, as a way to create more exiting play areas in which children have more freedom of movement. By focusing on what children age 6-8 in (very) urban areas need and want, the possible solution of play routes can be developed properly. Most important is to take into account the child's perspective. Nevertheless, the parents' point of view and the perspective of the local authorities need to be considered for the complete picture.

2.2. Target Group Analysis

In the previous analysis, the problem definition and target group were specified further. The target group can now be described as 'children age 6-8, living in (highly) urban areas of the Netherlands.' This target group analysis focuses on the characteristics of this group, for example by means of analysing the physical, emotional and cognitive stage of development further. Since both genders are included, the differences and similarities between boys and girls will also be analysed more thoroughly.

The questions that cannot be answered by looking at literature (because the answers are not profound enough, or need to be answered from the child's perspective) will be answered in the research phase.

2.2.1. Method

Again, a list of questions was formulated prior to consulting available literature. Finding answers to these questions should give more insight in the target group's behaviour and characteristics.

2.2.2. Main questions

The questions that were formulated as guidelines for this analysis are listed below:

1. What is the average stage of development of the target group?
   - 1.1. What is the physical stage of development?
   - 1.2. What is the emotional stage of development?
   - 1.3. What is the cognitive stage of development?
   - 1.4. What are the differences between boys and girls in this age range?
2. What is known about the behaviour of the target group?
   - 2.1. What is the daily pattern of the target group (differences/similarities boys and girls)?
   - 2.2. What does the target group like and dislike?
   - 2.3. What does the target group dream of?
   - 2.4. How does the target group use the public space?
   - 2.5. How does the target group use the public space for playing? (In addition to what was already found in the problem analysis)
   - 2.6. How does the target group play in general? (In addition to what was already found in the problem analysis)

2.2.3. Findings

The findings are mainly based on two books:

- '*Ontwikkeling in vogelvlucht.*' by Delfos (1999) about the development of children (described in a nutshell);
- '*Het speelgoedboek*' by de Valck (1996), about the how to chose toys for children based on their development and interests.

The full set of findings can again be found in the appendix (see Appendix B). Below, the main findings are described, divided among a couple of themes based on the formulated questions.

General descriptions of development stages

In her book about the development of children and adolescents, Delfos (1999) explains that the language development, the cognitive development and the expansion of the social and physical environment takes place particularly between the ages 5 and 8. This means that a part of the chosen target group is probably still in an early stage of the different types of development, while others are multiple stages further.

Physical development and playing

Playing outside is necessary for social and motor development. This was found, among others, in a study by Hendriks (1998) in which playing outside in dangerous (due to traffic) and safe neighbourhoods was compared (Delfos, 1999).

Typical outside play activities for children (Delfos, 1999; de Valck 1996):

- age 5-6 (second part of the lower school classes) are playing with a ball, (water)guns, the skipping-rope, climbing bars, swings, seesaw, slides, cycling, skating, crayons, and marbles. They like building 'worlds', mechanical playing, being creative/crafting, research, and looking for security.
- age 7-8 (middle school classes) are more focused on practicing sports and testing/improving skills: balance games, competition (who throws the highest, who is the fastest, etc.), and like action. However, most of them also still like the swing, skating, climbing bars and so on.

As described in the problem analysis, Lauwerier (2009) also found the importance of competition.

Emotional development

Going to school every weekday confronts the child with other social environments, decreasing the self-centred behaviour. The child has to learn how to deal with an environment in which the mother or father is no longer the only person that arranges contact. Friendships are necessary for learning how to emphasize with others.

Typical social behaviour per age grade/age group:

- Children in the second lower school class (age 5-6) like to belong to the group, like to spend time with other children their age, and with parents/teachers/grandparents. They prefer playing by the rules, like tradition, order and repetition;

- In general, seven year olds are proud to 'no longer be an infant' (lower school classes). With this, they accept the challenge of learning in the middle school classes, grow in independence from home, and the growing responsibility for own tasks and times;
- Eight year olds start to select. They consider themselves as grown up and like to be considered as such. These children stand up against their parents and 'action' seems necessary everywhere. Movement, excitement, challenges, impatience and enthusiasm are all part of this. Social involvement, like caring for sustainability and poverty, is also part of this 'action'.

Delfos explains that the relations with brothers and sisters are important. Older children in the family act as a model: a girl with an older brother is more boy-like in general than a girl with an older sister.

De Valck also mentions that children age 5-6 often play together (groups of 2) whereas children age 7-8 often play in groups. The boys and girls play separated at the age of 7-8.

Cognitive development

Children learn to read from about the age of 7. However, most children are ready for writing from the age of 5. From the age of 5-6, children have mastered their mother tongue enough to understand and make understand. From then on, the attention focuses on refinement of the understanding of the structure of language and learning to read and write.

Both Delfos as de Valck describe a transition from concrete to abstract thinking somewhere between five and seven years of age. When this transition takes place differs per child, but can be linked to the clear interest to learn to write and read (de Valck, 1996) or the moment the child can write and read (Delfos, 1999). Characteristics of behaviour of children after they have gone through this 'transition':

- According to Piaget (1972, 1978) children gain insight in the understanding of conceptions. It learns to understand the nature of dreams (as not actually happening, but as inside-events during sleep);
- Magical thinking takes place: things happen because you wish for it. An example can be found in children that have to skip a tile at every step when walking, in order to keep bad things from happening, or to make good things happen;
- Metaphoric (symbolic) thinking is not yet understood, but things do not have to be explained completely literally anymore;
- Children learn to put things into perspective at the age of 5-8: the child will not comply with everything a parent/teacher says, but puts it into perspective and then follows his/her own wishes.

Children that not yet have gone through the transition from concrete to abstract are very visually minded. Communicating through concrete examples, visualizations (drawings, puppets and so on) works better than through words.

According to Delfos, children from 6-8 gain interest in the world around them. The child puts his own environment in perspective: the world is bigger than just its neighbourhood, and the child becomes more and more aware of its position towards others.

Playing/being in the public space

Tai, Haque et al. (2006) describe the influence of nature on the child's development. They state that middle childhood is a critical bonding period for children with nature. During this time, they use nature to develop autonomy, and begin to see nature as separate from themselves, while they simultaneously seek affinity with it.

Gender differences

Delfos states that boys finish their language development later than girls, and have more need to play outside. Girls can easily concentrate on (school) tasks and have more fun doing it. Because girls mature earlier, girls show bad behaviour between 7 and 10, while boys start doing this three years later. (Verhulst, 1985). Behavioural problems occur more often with boys than with girls, and is more external (aggressive behaviour). Girls tend to be anxious and behave shy (internal).
In general, boys have less fine-tuned left- and right motor skills because their right half of the brain is much more developed than the left one.

According to Rutter (1993), girls in general emphasize more on openness and trust than boys. Girls more often have a couple of close friends, where boys have a big group of friends. Girls share more emotional events and choose for two-relations; boys compare themselves with each other on the physical domain and play in groups. This matches with the findings of Lauwerier (described in the problem analysis), although she found that the younger girls and boys do play together quite often.

2.2.4. Discussion of target group analysis

From the literature it becomes clear that there are quite a lot of differences in the development stage of a 6 and 8 year old. Although the literature mostly categorizes the stages of development according to age, the descriptions are often based on the separation between lower school classes and middle school classes. Since the 'transition' in the development is closely linked to the ability to read and write, it seems more logical to focus on these middle school classes (grade 3-5). This also comes down to children age 6-8, but leaves out the children that do not have any reading and writing skills yet and have not yet started with their 'transition'.

It is unclear if the children age 6 in the studies by TNS Nipo and Qrius for example (described in the problem analysis) were able to read and write. It is likely that they could read, since both studies used online surveys with written questions. However, there is a possibility that others helped them filling in the questions.

The diversity in level of development among the 'middle school class children' is still quite big. The older ones might dislike playing with the other gender, and are more competition focused. Additionally, a younger child still might have some trouble with understanding abstract questions, while an eight year old might find certain concrete tasks to easy/boring. It is important to take this into account in the research phase.

2.2.5. Conclusion of target group analysis

After analysing the target group further, it can be concluded that it is better to focus on the middle school classes instead of focusing on a specific age-group (and thereby including two levels of school classes). Therefore, the target group specification is specified to 'middle school class children', which comes down to children in grade 3-5. These children are generally 6-8 years old.

During the research, it is important to take into account the differences in development stage of these children. The research methods should be understandable for the youngest children (not very acquainted with reading and writing yet) but at the same time be challenging enough for the oldest. In order to keep the amount of variables low in this research, it is undesirable to use different techniques/ research methods for different children.

The characteristics of 'middle school class children' in a nutshell (relevant for research/design phase):

- They generally like practicing sports, improving skills, and action. However, most of them also still like the swing, skating, climbing bars etc.;
- They are (more) independent from home;
- They often play in groups;
- They can put things in a bigger perspective, and are more aware of their position against others;
- Nature is supposedly important (for playing and their development) in the public space;
- The younger boys and girls play together, the older play apart. The playing style of boys and girls differs, but this is not strictly gender related.

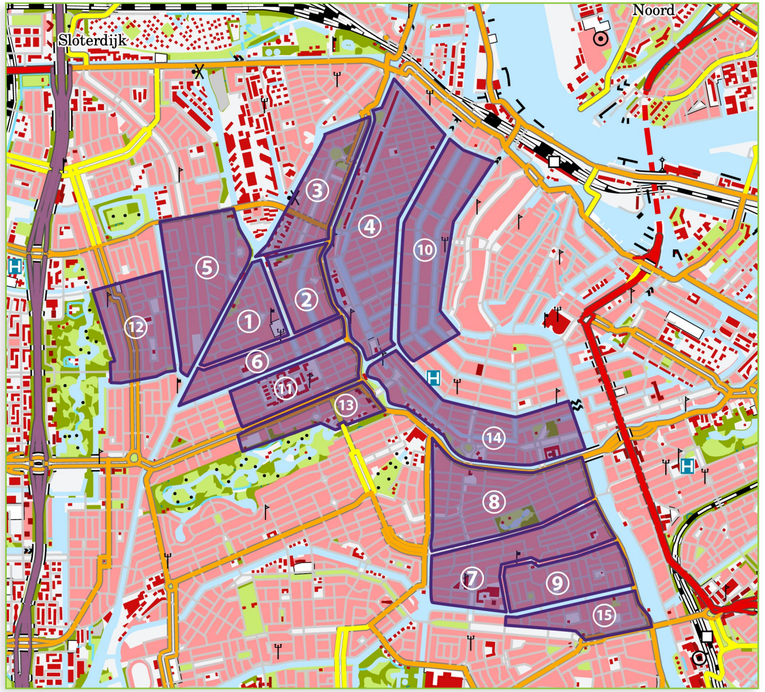


Fig. 2.2. - *Map of Amsterdam showing the neighbourhoods with the highest SAD (of Amsterdam)*

2.3. Location Analysis

The problem analysis concluded with a target location, being the (very) urbanized areas (municipalities) of the Netherlands. In order to design play routes for these areas, it is needed to analyse this further:

- first shortly on the level of municipalities, to see which ones are the most urbanized;
- secondly to the level of neighbourhoods, since a route goes through one or more neighbourhoods;
- and finally to a street (type) level, since the design solutions should be applicable in the (different types of) streets of these neighbourhoods.

In this analysis, this is done step-by-step.

2.3.1. Urbanized municipalities

The first step is to look into the most urbanized municipalities of the Netherlands. This is only an indication of the urbanity of neighbourhoods in these municipalities, since even the most highly urbanized municipalities have areas that are not that urbanized and vice versa. The statistics however function as a guideline for where to find the most urbanized neighbourhoods and streets in the Netherlands.

In 2012, 14 municipalities were categorized as 'extremely urbanized' by CBS, and 62 as 'strongly urbanized' (CBS, 2012). Although both categories of municipalities probably contain neighbourhoods that are extremely urbanized, only the municipalities that are 'extremely urbanized' will be taken into account here. The extremely urbanized municipalities are listed in Table 2.1.

2.3.2. Urbanized neighbourhoods

To continue on the level of the neighbourhoods, it is important to know how a neighbourhood is defined. Usually, municipalities decide how the borders of neighbourhoods are configured, although CBS coordinates this nationwide. These borders are often configured according to a building structure or a social-economic structure, in which one function is often dominant (e.g. living, industry, nature). This way, CBS can use the neighbourhoods for statistical analyses. A neighbourhood mainly covers a couple of streets, but it is possible that only one part of a street is included in a neighbourhood.

For each of the top 5 'extremely urbanized' municipalities, the 15 neighbourhoods with the highest surrounding address density (SAD) are listed in tables and shown on maps, see Appendix C (and an example in Fig. 2.2). It is clear that in Amsterdam, 's Gravenhage, and Rotterdam the SAD for the most highly urbanized neighbourhoods is much higher than in Leiden and Delft.

Amount of children

The tables and description in the appendix also indicate which neighbourhoods have a relatively high amount of children residing there. However, since it is unclear if this means that the neighbourhood is child-friendly or not, it is not yet concluded if these neighbourhoods are a focus point or exactly the opposite. During the neighbourhood analyses, it will be investigated further, by looking for example at the amount of playgrounds, squares, open space etc.

Municipality	Population	SAD per km²
Amsterdam	789285	6065
's-Gravenhage	501048	4718
Rotterdam	615937	3852
Leiden	118745	3418
Delft	98679	3360
Schiedam	76129	3357
Haarlem	151853	3287
Groningen	192985	3182
Utrecht	316160	3144
Rijswijk	46963	3109
Vlaardingen	71110	2823
Leidschendam-Voorburg	72401	2801
Tilburg	207510	2556
Beverwijk	39814	2516

Table 2.1. - *The 14 extremely urbanized municipalities in the Netherlands (CBS, 2012).*

2.3.3. Types of streets

The next step is to look into the different types of extremely urbanized neighbourhoods, by analysing them on a street level. City centres for example have many streets with low-rise buildings, are crowded but often have car-free zones, while the densely populated high-rise suburbs have more space between the different buildings but have more and faster traffic through the neighbourhood. This influences the design approach of the play routes.

Method

The different types that will be used for this research are based on a basic list of street typologies by the 'Ministry of Housing, Spatial Planning and the Environment' (VROM, currently named Ministry of Infrastructure and the Environment) (Leidelmeijer, van Lensel et al., 2009), which can be found in Appendix D. Different 'dimensions' were used by VROM to characterize streets, like the type of buildings, function of the buildings, dominance of traffic and parked cars, amount of greenery/water, the urbanity etc. The appendix also includes a short description of the street types that score average to very high on the dimension 'urbanity' by VROM.

The streets of previously listed extremely urbanized neighbourhoods will be matched with the dimensions by VROM. This will be done by looking up the neighbourhoods with Google Streetview and comparing the streets with the written typologies by VROM.

It is possible that different streets in one neighbourhood match with different typologies, since the neighbourhood borders are not necessarily based upon separating different typologies. Therefore, 3-5 stills will be made in each neighbourhood (depending on the size and diversity) of the most occurring street types of a neighbourhood. This should give a basic impression of the most occurring street types, and the physical characteristics of these streets.

The opportunities for playing are also included in the dimensions by VROM. Attention will be paid to the neighbourhoods with a relatively high amount of children, since it would be interesting to see if these mostly are neighbourhoods that suit with one of the typologies with a 'high' or 'very high' score on the dimension 'opportunity for play'.

Findings

In general, the 75 neighbourhoods mostly consisted of quite narrow streets with stacked houses/apartments (about 3-6 levels high), alternated with single-family terraced houses and/or one or two high-rise buildings. Playgrounds, squares, small parks or grass fields were found in almost every neighbourhood, although the size and frequency of occurrence differs a lot. Only a few of the neighbourhoods were dominated by blocks of flats in the greenery.

Most of the streets in the different neighbourhoods are 'urban, stacked residential streets'. From the almost 300 stills, about half could be categorized as this type of street, while the next most occurring street types were counted at about 30 stills each.

These next most occurring street types were 'blocks of flats in the greenery', 'stacked living and working', 'standard single-family terraced houses' and 'stony single-family residential streets.'

The 'shopping street' was found in some neighbourhoods, but could often better be described as stacked living and working because of the low spatial quality of the area (due to traffic, dirt etc.). In the end only 10 of the stills were categorized as 'shopping street' due to a better spatial quality than the 'stacked living and working' streets.

The 'urban traffic street' was found a few times, but was never one of the dominating street types in a neighbourhood. Sometimes, these streets functioned as a border of two neighbourhoods. (Rings of) canals were also found to be a common neighbourhood-border.

The most occurring street types are shown (simplified) in Fig. 2.3.

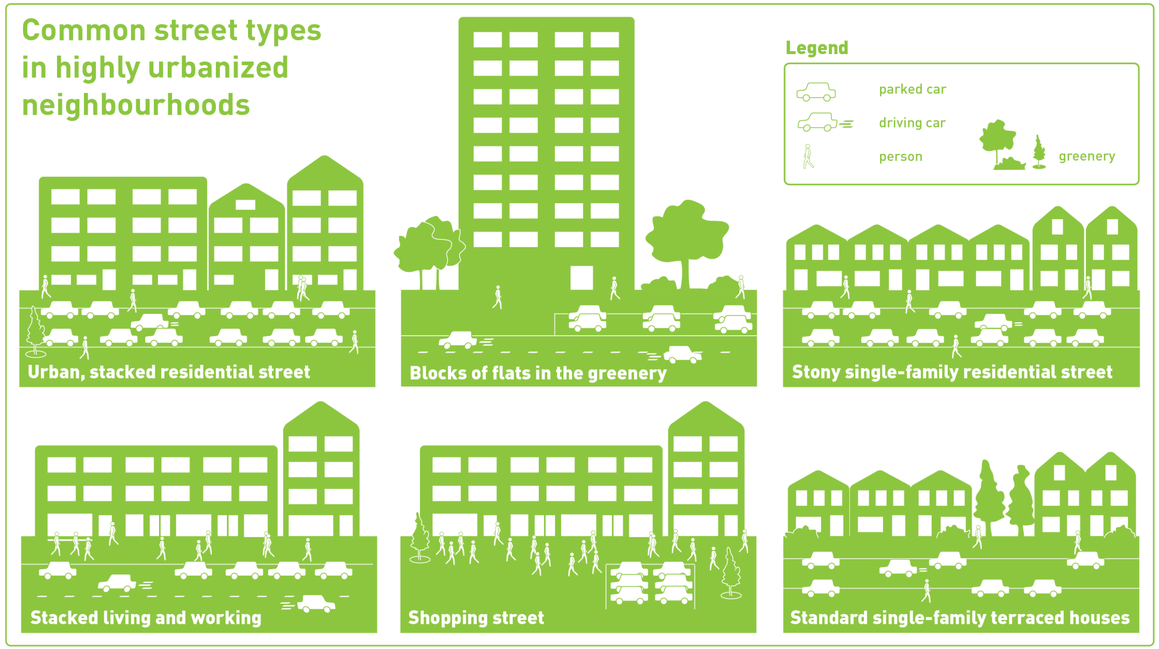


Fig. 2.3. - *Different types of streets that score high on urbanity.*

Fig. 2.4. - *Poptahof Zuid (below yellow line) and Poptahof Noord (above line), topview (Google, 2012)*

Fig. 2.5. - *Schildersbuurt-Oost, sGravenhage (Google, 2012)*

Fig. 2.6. - *Bloemhof, Rotterdam (Google, 2012)*

Urbanized neighbourhoods with high % of children

Specifically looking at the most highly urbanized neighbourhoods (top 15 for each municipality) with a relatively high percentage of children between the age of 0 to 15 (>20%), this is what was found:

- In Delft and Rotterdam, these neighbourhoods were relatively far from the city centre;
- The neighbourhood in Delft (Poptahof Zuid), is a typical example of a 'blocks of flats in the greenery' neighbourhood (see Fig. 2.4). Of all the most highly urbanized neighbourhoods, there are only a few that are mainly built-up as blocks of flats. The neighbourhood North from Poptahof Zuid is Poptahof Noord (also shown in Fig. 2.4). This neighbourhood is very similar to Poptahof Zuid, but here only 11% of the residents are children. Some of the flats in this neighbourhood are meant for elderly people, but besides that not many differences can be found. A big playpark was made on the border of these two neighbourhoods. Therefore it is not possible to conclude if there is a link between the type of neighbourhood and the amount of children in this case.
- The type of street in the neighbourhood in Rotterdam with a high percentage of children (Bloemhof, see Fig. 2.6) is predominantly the stony single-family residential street. Less common but also present are the streets with the standard single-family terraced houses and some urban, stacked residential streets.
- In 's Gravenhage, it is interesting to see that the highly urbanized neighbourhoods with a high percentage of children are all on one side of the most urbanized area. The type of streets or layout does not differ very much in these neighbourhoods compared to the ones with less children. The most striking difference is that there are slightly more (small) single-family houses in these neighbourhoods, like the ones in Fig. 2.5.

The other 'extremely urbanized' neighbourhoods (SAD of >2500 per km^2) with more than 20% of the residents being children (age 0-15) were globally checked on street typification as well. The type 'blocks of flats in the greenery' and both types of single-family terraces houses were found here much more often. These neighbourhoods however have a much lower SAD than most of the top 15 neighbourhoods.

Differences between municipalities

It was found that the neighbourhoods in the bigger municipalities (Amsterdam, 's Gravenhage and Rotterdam) do not differ much in layout from the most urbanized neighbourhoods in Delft and Leiden, despite the much lower surrounding address density in the neighbourhoods of these two municipalities.

It is notable however that there is much more variation between the neighbourhoods in these smaller municipalities: the top 15 of Delft's most urbanized neighbourhoods contains some neighbourhoods with merely blocks of flats in the greenery and single-family terraced houses, while almost all of the most urbanized neighbourhoods in Amsterdam primarily contain urban, stacked residential streets. For Rotterdam and 's Gravenhage this is also the case, although to a lower degree.

1. Main problems of the urban areas

In the analysis phase, it was found that children in (very) urban areas more frequently indicate:

- that they would like to play outside more often;
- that the sidewalks/squares are too boring;
- that they would like to have more squares/grass fields;
- that they are not allowed to play outside without supervision (parents confirm this);
- that they are not allowed to walk/cycle to school without supervision (parents confirm this);
- that they are not allowed to go to a nice play area (parents confirm this).

2. Literature on urban development

Definition of building density:

Within the urban development, the density of blocks of buildings is defined through four indicators: Floor Space Index (FSI), Ground Space Index (GSI), Open Space Ratio (OSR) and Layers (L). In Appendix E examples are given of these indicators (Meyer et al, 2008).

2.3.4. Discussion

It seems logical to focus mainly on the type of street that dominates most of the extremely urbanized neighbourhoods: the urban stacked residential street. Nevertheless, some issues might influence this decision. These are described here.

High % of children

Earlier, the question was raised if a high percentage of children in an urbanized neighbourhood would make this a suitable target area. After analysing the neighbourhoods, the typology of these streets has become more clear: neighbourhoods with a relatively high amount of children seem to have more (stony) single-family terraces houses or blocks of flats in the greenery. In the most highly urbanized areas, that particularly exist of streets with urban stacked residential houses, a relatively low amount of children were found.

The typology by VROM states that there is more opportunity for playing in the 'blocks of flats in the greenery' than in the 'urban, stacked residential street' or the 'stony single-family residential street'. This would mean that the blocks of flats in the greenery do not have the highest need for improvement.

This can party be confirmed when looking at the main problems of the urban areas (found in the analysis phase, summed up in text box 1) and literature about urban development (text box 2).

The urban, stacked residential streets and (compact) stony single-family residential streets generally have a much higher FSI and a much lower OSR than the blocks of flats in the greenery. Although the amount of layers (L) are slightly higher for the blocks of flats, the indicators show that there is much more open space in the blocks, and therefore it is less likely that children in these neighbourhoods need more squares/grass fields (green marked problem).

On the other hand, literature does state that social safety is a problem especially in the blocks of flats in the greenery, since supervising appears to be difficult in these neighbourhoods. This is because people are further away from the street (mostly, the ground floor is not used for housing) and the open space is big (creating more distance). (Heeling et al. 2002). But although a play route design could probably influence social behaviour, the focus does not lie on changing the behaviour of adults causing this kind social safety issues (criminality, drugs dealing etc). Slightly influencing the behaviour of adults is not out of the question, though this would be more in terms of where people park their cars or how fast they drive.

Summarized, the blocks of flats in the greenery have more space for playing and play routes are not a very suitable (potential) solution for the type of social issues that exist in this type of neighbourhood. Therefore, this type of street is not considered as a target area for this project.

The streets with stony single-family terraced houses were found to be very similar in street type as the urban, stacked residential streets. Therefore, the streets are also quite similar in terms of opportunity for play and possible solutions for play routes. It might be that the single-family houses are better

for social control (since the distance between the house and the street is smaller) and that children are therefore allowed to go outside alone more often. But because this type of street (in the highly urbanized neighbourhoods) is often surrounded by stacked residential streets, this is not very relevant for a play route.

In terms of how many children are reached by a solution, it is difficult to see what is most effective:

- Although there are more children in the neighbourhoods with mainly single-family terraces houses, not many streets of this type can be found in the most highly urbanized areas. There are many children, but on a small area.
- There are less children living in the urban, stacked residential streets, but in the urbanized area this type is present much more often. Therefore a general solution could be applied on a lot of streets and therefore reach many children in a big area.

- As written before, the children that live in the single-family terraced houses in extremely urbanized areas will probably have to go through an urban, residential street more often than the other way around, since there simply are more of these streets in the extremely urbanized areas.

Because of this, the focus will be mainly the urban, stacked residential streets. In the end, it would be best to design a play route concept for both typifications. Since the types do not differ much it is likely that this is possible.

Differences between municipalities

As described earlier, the neighbourhoods in all analysed cities were quite similar, despite the much lower SAD in the neighbourhoods in Delft and Leiden. In these last two cities, there was however more variety in the types of neighbourhoods: for example, flats in the greenery were found more often in Delft's top 15 of most urbanized neighbourhoods than in Amsterdam.

It was expected that this could be explained by the amount of neighbourhoods in the municipalities: Amsterdam is bigger, would have more neighbourhoods and therefore the switch in type of streets occurs later on in the list. However, Amsterdam is divided in 68 neighbourhoods, while Delft has got 91.

Presumably, the difference can simply be explained by looking at the time in which the neighbourhoods have been built. As example, Amsterdam and Delft are compared: Almost all of the most urbanized neighbourhoods of Amsterdam have been built (far) before the start of the 20th century. The, in this case, 'deviant' (not mainly urban stacked residential) urbanized neighbourhoods of Delft have been built during or after the second half of the 20th century. Amsterdam expanded earlier than Delft, resulting in more neighbourhoods with primarily urban, stacked residential streets. Amsterdam does also have neighbourhoods that were built during or after the second half of the 20th century, but has a relatively high amount of older neighbourhoods (van der Hoeven and Louwe,1985; Gemeente Delft, 2012). Just like in Delft, these neighbourhoods in general have a higher surrounding address density and are therefore defined as more urbanized.

A good starting point for an analysis of a city and its neighbourhoods and streets (for designing a play route for example) would be to check when the different parts were built. This can already reveal much about the types of streets that can be expected.

2.3.5. Conclusions

Urban, stacked residential streets are most common in the highly urbanized neighbourhoods of the most urban municipalities in the Netherlands. Designing a play route for these streets should therefore improve the play opportunities of the chosen target group. Because this type of street is very common in different urbanized municipalities and neighbourhoods, solutions for this type of street will be broadly applicable. Nevertheless, not all the urban, stacked residential streets are the same. To make the play route concepts not just suitable for one of these streets, the shared characteristics but also the differences should be taken into account. The characteristics are described on the next pages.

A solution for this type of street will also suit with many of the streets with single-family terraced houses. These can be found (although less often) in extremely urbanized neighbourhoods as well. The 'blocks of flats in the greenery' are left out, since they would require a very different type of solution.

In order to design a good play route, it still is key to know what kind of playing the chosen target group prefers and which routes are most frequently taken. This should be the focus of the contextmapping research and co-research. The municipality in which this research is done is not that relevant, as long as the neighbourhoods are extremely urbanized and primarily exist out of the urban, stacked residential streets.

Fig. 2.7. - *Examples of the characteristics (numbers correspond with number of characteristic) (Google [Streetview], 2012)*

2.3.6. The urban, stacked residential street

Although there still are many differences between the 'urban, stacked residential streets', a couple of characteristics can be found that should be taken into account when designing the play routes. Logically, these characteristics are similar to the earlier described typification, although the description is more specific here:

1. Parked cars
   - Parked cars are dominant on (both sides of) the streets, making the streets look full and narrow. (see no. 1 in Fig. 2.7)
2. Sidewalks
   - There is always a sidewalk on one side of the street, often even on both sides. These sidewalks are quite narrow in most cases, and sometimes are (frequently) interrupted by a tree or the stairs of a doorway;
   - The interrupted sidewalks can mostly be found in the streets in the old city-centres with canals on one side of the street (see no. 2);
   - In most of the streets, the front doors (or the doors to the staircases) come out directly on the sidewalks. Without a small path or front garden, the people will therefore stand still on the sidewalk to open a door for instance. This influences the amount of available space on the sidewalks.
3. Greenery/water
   - Trees can be found in most streets, but sometimes greenery is completely absent. In very exceptional cases the ground level has got a (small) front garden, or some bushes are placed at the base of the building (see no. 3);
   - Water can mainly be found as (rings of) canals.
4. Street lay-out
   - In most of the stills, there are houses on both sides of the streets. Sometimes a canal, park or square can be found on one side or the end of the street;
   - The streets are often one-way streets, although the broader streets (often surrounding a block of one-way streets) mostly allow two-way traffic;
   - Specific cycle paths are often absent in the one-way streets, people cycle on the same part of the road as the cars (see no. 4);
   - In between the blocks of one-way streets, car free alleys can occasionally be found.
5. Street furniture
   - Little street furniture can be found in this type of street, the streets are quite empty apart from parked cars and bicycles;
   - Bollards, streetlights and trees are most frequently found;
   - Occasionally (shared) refuse bins, car park ticket dispensers and bicycle racks are placed on the sidewalks or squares;
   - On (small) squares between the streets, playgrounds, benches, litterbins and parks/grass fields can be found (see no. 5).
6. Play opportunities
   - There is little room for playing on this type of streets, since the streets and sidewalks are mostly quite narrow. Children will have to find ways to play in these narrow streets, or go to one of the neighbourhood's parks/squares.
   - To get to these play locations, children will have to walk through different streets. Although it is an estimation (based on the amount of playgrounds/squares/parks that were found during browsing through the neighbourhoods), it seems that children do not necessarily have to cross a busy road to get to an area where they can play. This, however, should be checked in the contextmapping sessions/co-research.
   - Based on the previous analysis, it is probable that these playgrounds are often for younger children, and the children still cannot go to their (preferred) play area by themselves. This too has to be checked in the contextmapping sessions/co-research.

Some of the characteristics are very similar for the other (less frequently) occurring street types. In general, the 'stony single-family residential street' shares most characterizations, except for the fact that the houses are not stacked.

The streets with 'standard single-family terraced houses' are way more spacious than the urban, stacked residential streets.

2.4. Rules and Regulations Analysis

The last part of the analysis is researching what kind of rules and regulations need to be taken into account when designing play routes. The existing rules and regulations by the Dutch government (published in a manual by van Aken et al., 1997) mainly concern safety issues about height, shape and materials. An example of the height of a play element versus its required falling zone can be found in Fig. 2.8.

The rules and regulations are not necessarily a basis for design solutions, but are an important factor in designing plausible concepts. Therefore, the information is summarized into design requirements and wishes. The summary can be found in Appendix F.

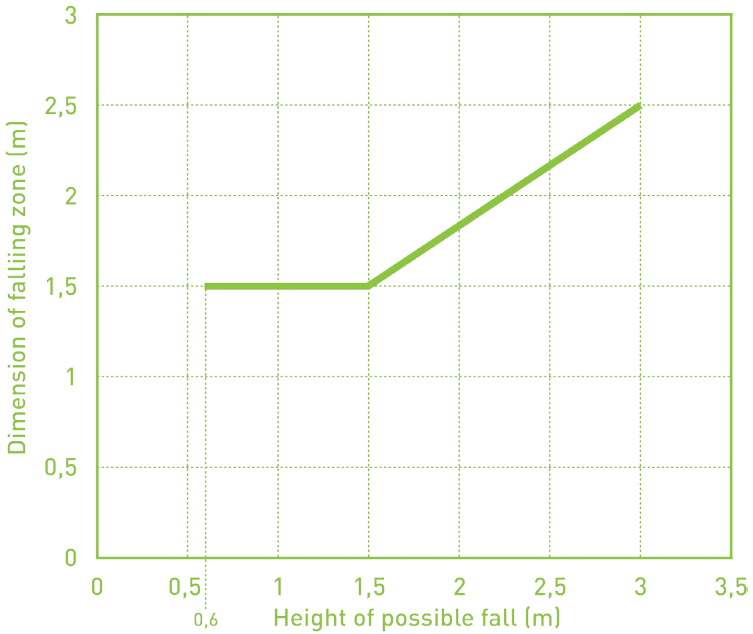


Fig. 2.8. - *Required dimensions of the falling zone versus the height of fall.*

3. RESEARCH PHASE | Exploring the target groups' context, wishes and feelings

When designing play areas and (play) elements for the public space, the child's perspective is often left out or ignored. The wishes and demands of the children are filled in by adults (e.g. parents, teachers or designers) and are based on their own wishes and demands or biases about what children feel and dream.

It is of major importance to get insight in what children actually wish for regarding playing in the public space, in order to get to profound solutions. There are two problems with gathering this information though: children need to be aware of their wishes and feelings, and be able to communicate them in such a way that the researcher/designer understands them.

There are different methods that can be used, like contextmapping and co-research, which can make this 'hidden' information about what children feel and dream of more accessible. Within these methods, different techniques/tools can be used. To find out what techniques suit best with the target group of this project and the questions to be answered, the methods and different techniques have been analysed shortly. This analysis can be found in Appendix H.

This chapter starts with describing the research setup, followed by the results (per research part) and conclusions.

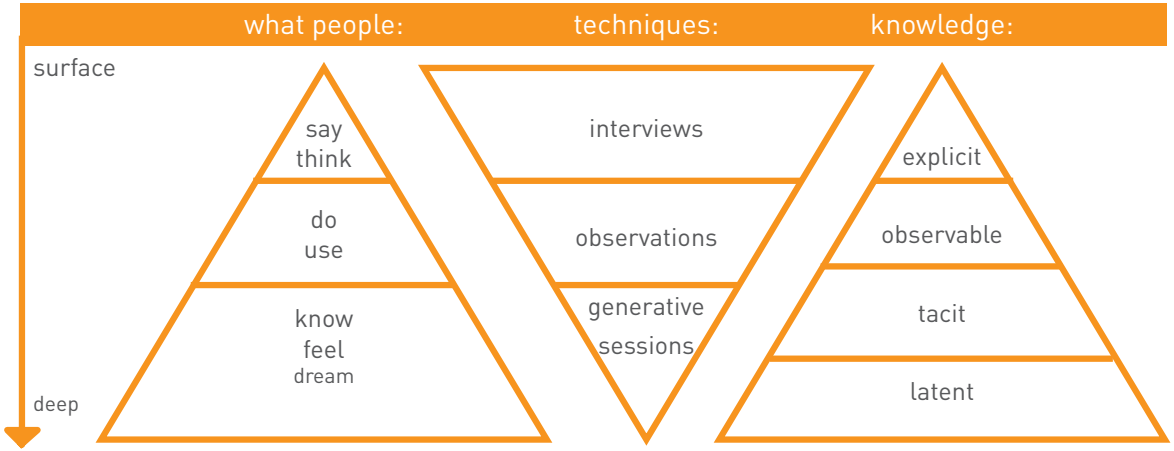


Fig. 3.1. - *Different levels of knowledge on experience are accessed by different techniques (Sleeswijk Visser et al., 2007)*

3.1. Research Setup

The research setup starts with introducing a list of research questions. Then, the contextmapping setup will be explained, followed by the co-research. The contextmapping is again split up in two parts: the sensitizing exercise and the generative session.

All the research parts will be executed with the chosen target group (children in grade 3-5) and mainly on the selected locations (urban neighbourhoods, with mainly urban, stacked residential streets). As a reference, some children from different neighbourhoods will also be included in the research.

3.1.1. Research questions

With the refined problem definition and target group from the analysis phase, and by looking at the upcoming design phase, a set of research questions can be listed. These can be categorized by their topic and the level of knowledge (see Fig. 3.1 and Appendix H), and thereby be linked to certain research methods.

The research questions can be found in Table 3.1.

Theme/Research question		Level	Method/technique
1. Playing			
1.1.	How frequent and for what duration does the target group play in the public space?	Explicit	Booklets
1.2.	Where does the target group play in the public space? Where would they like to play and why?	Explicit, tacit	Booklets; co-research
1.3.	How does the target group experience playing in the public space? For example, what is 'fun', 'dumb', 'difficult', 'scary', 'exiting', 'boring' and 'crazy' about playing outside?	Tacit	Booklets
1.4.	What does and doesn't the target group like about playing in their own neighbourhood?	Explicit (tacit)	Co-research
1.5.	What stimulates the target group to play in the public space and why?	Explicit, observable	Co-research
1.6.	What holds the target group back from playing in the public space and why?	Explicit, tacit	Co-research
1.7.	What would the target group like to improve about their neighbourhoods in terms of play opportunities?	Tacit	Generative session
1.8.	What is the playing radius of the target group (from the house or school)?	Explicit, observable	Booklets
1.9.	How much space does the target group have, need and wish for, for playing in the public space?	Explicit, tacit	Co-research
2. Routes			
2.1.	Which routes does the target group take?	Explicit, observable	Booklets
2.2.	How frequent does the target group take these routes?	Explicit, observable	Booklets
2.3.	How long are these routes? (distance and time)	Explicit, observable	Booklets
2.4.	By what means does the target group take the routes (walk/cycle/car etc.) and why? By what means would they like to travel on these routes?	Explicit, observable	Booklets
2.5.	With whom does the target group take the routes and why? With whom would they like to take these routes (nobody is also a possibility)?	Explicit, observable, tacit	Booklets
2.6.	How does the target group experience the current routes? What qualities and problems does the target group face on these routes?	Tacit, observable	Booklets; co-research
2.7.	What kind of adjustments/additions could improve the routes?	Tacit	Generative session; co-research
3. Playing and Routes			
3.1.	Does the target group 'play' along the routes, or are there play areas located on/along the route? If so, of what kind?	Explicit, observable	Co-research
3.2.	If the target group could transform a current route to a play route; which routes would they prefer to change? On which routes would the target group have/make time to play?	Explicit, tacit	Generative session
3.3.	What possible experiences in the public space can the target group think of on a route? How can these experiences be used for playing?	Tacit, latent	Generative session
3.4.	What (play) experiences would the target group prefer on a play route? What characteristics of these experiences appeals to the target group?	Explicit, tacit, latent	Generative session
3.5.	What kind of (play) elements would motivate the target group to play along a route?	Tacit, latent	Generative session
3.6.	What kind of appealing (play) experiences can the target group think of, taking into account the limitations in the public space in terms of available space?	Tacit	Generative session
3.7.	What would the perfect play route look like? Which (play, nature, general) elements/experiences would be available on this route? How would the target group use this route (with whom, for how long etc.)	Tacit, latent	Generative session
3.8.	What would withhold the target group from using/playing on a play route?	Tacit, observable	Generative session

Table 3.1. - *Research questions*

3.1.2. Sensitizing booklets

While formulating the research questions, it appeared that there were quite some factual questions that had remained unanswered in the analysis phase. These questions are very suitable for a sensitizing exercise, since they do not require much imagination from the participant yet, but do make the participant think about the topic.

A booklet with creative exercises and questions was chosen as means for the sensitizing exercise. This common sensitizing method suits well with both the type of questions that need to be answered and the target group.

Objective

The booklets will be used for multiple purposes:

- As means for answering some of the (mainly explicit) research questions;
- As sensitizing tool for the generative sessions;
- As input for the generative session.

The research questions that should be answered through the booklets can be found in Table 3.1.

Question 1.8, 2.2 and 2.3 will only be answered in relative terms (this route is longer than that route, this route is taken more often than the other etc.). Parents could be consulted for exact results.

Question 1.3, 2.4-2.6 and 3.1 are answered partially in the booklets. In a generative session, or by evaluating the booklets with the participants, more insights can be shared.

Booklet layout

The booklet (already filled in by one of the participants) can be found in Appendix I. The research questions have been translated to a number of creative assignments and some simple questions.

In order to first focus merely on the routes, the questions/assignments that have to do with playing were inserted at the end. Also, the more abstract questions (associating routes and playing with certain themes) have been placed after a couple of concrete questions to build up in level of difficulty.

Distribution

The booklets will be handed out to approximately 25 children. Some of these children will get a booklet as a preparation for the generative session, others will not participate in the sessions at all. It is expected that not all booklets will be filled in completely, and that some will not be returned at all.

The booklets will be handed out on more than one location. This way, similarities and differences between locations can be found. Since not all the children on one location walk/cycle the same routes (depends for example on where they live), it is also interesting to see the similarities and differences between children that were approached on the same location.

The first location where booklets are handed out will be a child care facility in the city centre of Delft. After this, the assignments and distribution method will be evaluated and improved if necessary.

3.1.3. Generative session

Some of the children that fill in a sensitizing booklet will later participate in a generative session. Since the participants already thought about the topic, the session can focus more on details and on the tacit knowledge. The objective and the setup of the sessions are described below.

Objective

The objective of the generative session is to gain insight in the experiences (tacit knowledge) of the target group.

The research questions that should (implicitly) be answered through the sessions can again be found in Table 3.1.

Setup

The session will be done with groups of 3 children from grade 3-5 (approximately age 6-8). If possible, boys and girls will be mixed to create better group dynamics. About 4 sessions should give enough insight in the experiences of the target group. Again, a pilot session will be done at a child care facility in the city centre of Delft. The setup will be revised if necessary.

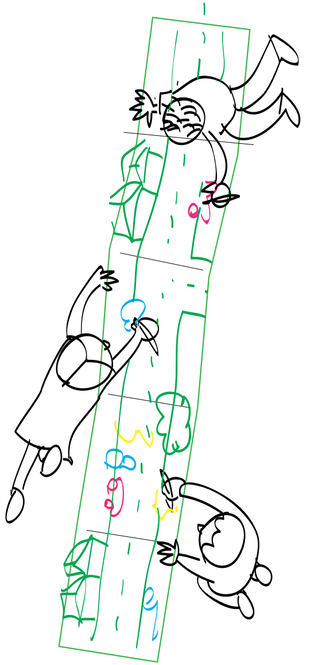
The exercises in the session are not designed to directly answer the questions as stated in the objective. However, the information that is gathered from the sessions (recordings and results of exercises) can be translated to answers on the questions.

In the first exercises, 'playing' is left out on purpose to make sure the children mainly focus on the routes. Only the last exercise will have to do with routes and playing. The materials can be found in Appendix J.

The session will take about one hour, and is built up from several short exercises:

- Introduction: A short explaination is given and a short game is done as an icebreaker. In this game, the participants blindly pick two cards with images on it, and have to find a similarity between the two images. The point is that the participants learn that speaking their thoughts is good, and that there are no wrong answers as long as they say what they think and feel. (5 min)
- Shortly go through the sensitizing booklet, what did they fill in and why? (5 min)
- Exercise 1*: All participants get 20 photos of things they might see/encounter on their way (when walking/cycling), a number of keywords (like 'fun', 'scary', 'interesting' etc.) and an empty sheet. The assignment is to select photos that fit with the keywords in their opinion. They write or tell why the photos fit with the keywords. (25 min)
- Short break. (5 min)
- Exercise 2*: On a long piece of paper (with a street, and some 'normal' elements such as a bench, trees, a parked car, a bicycle rack etc. drawn on it already), the participants can draw their ideas on how to make their route/the street better. First, the participants can make whatever they like. After a couple of those ideas, the participants are asked to think of combinations with 'normal' elements in the street and more specifically about playing on a small area. (25 min)

** These assignments were slightly adjusted after the pilot session.*



3.1.1. Co-research

Co-research will be used to find out what the target group finds/reports about routes and playing when they walk through a neighbourhood without an 'external' researcher. This can give interesting insights in the experiences and needs of the target group. Again, the objective and setup are described below.

Objective

During the co-research, two children (of which the actual participant is part of the target group) will walk through the participant's neighbourhood. The other child will be the co-researcher, also called the 'collaborator'. The aim is to answer (part of) the research questions by using a slightly different method. New insights can be gathered, and things that were already found can be reconsidered or substantiated further.

Setup

The co-research is split up in six phases:

1. Training: the researcher trains a child to be the collaborator (or other participant);
2. Preparation: they practice the actual research;
3. Collecting data: the child researches a friend;
4. Analysis: the child reflects on the results in relation to himself;
5. Feedback session: the researcher and the child discuss the results;
6. Analysis: the researcher draws conclusions.

If the target group is not allowed to go on the street without supervision, the collaborator might need to be a key person like a parent or older brother/sister instead of someone from the target group.

A research toolbox is given to the collaborator during the training. This toolbox contains different cardboard assignment cards, some markers and a device for documentation. There are three versions, one with a photo camera, one with a video camera and one with a sound recorder. The toolkit with the photo camera is shown in Fig. 3.2.

In short, the collaborator and one of his/her friends (target group) walk through the neighbourhood of the participant. They pick a route that the participant often walks/cycles and execute the assignments from the assignment cards. The participant shows this route to the collaborator and the collaborator makes notes and asks questions.

In general, the assignments have been divided among different topics:

- Introduction: who is the collaborator, who is the participant and what route do they choose?
- The route in general: find things on the route that are associated with certain keywords.
- The route in more detail: what does the participant normally do on the route, what does he/she like least about the route and how would they improve this?
- Playing (on the route): does the participant play on the route, and where do they otherwise play (and what/how)?

The assignment cards (in Dutch) can be found in Appendix K.

The co-research will be executed 3-6 times, of which at least one time in the chosen type of urbanized streets/neighbourhoods. Preferably, the route of most participants goes through different types of streets. This way, positive and negative properties of each type can be found.

Fig. 3.2. - *Co-research toolkit*

3.2. Research Results

This part describes the research results of the sensitizing booklets, the generative sessions and the co-research.

The raw data of the booklets has first been clustered among the research questions. This was also done with the written data and illustrations (drawings and photos). Next, the videos and recordings were transcribed and still images were made from the videos. This way, only written data and images remained from all data, making it easier to compare and cluster the results (see Fig. 3.3 for overview).

The results of these methods will first be described generally. This is followed by a more detailed description of the results based on the previously formulated research questions.

3.2.1. Sensitizing booklets

Of the first 8 booklets that were handed out, only 1 returned. Therefore the distribution method was slightly changed. Instead of handing the booklets out to random children in the child care facility, the booklets were distributed in classes. And where the participants first had to send their booklet back by mail (with an enclosed envelope), they could now hand it in at school. Of the 34 booklets that were handed out (in total), 20 booklets returned. Most of the booklets were filled in completely, although some questions were answered with 'nothing' and sometimes one or two of the assignments were skipped partially.

The way and detail in which the assignments were executed by the participants differed; some were filled in very elaborately while other participants stuck to short answers and simplistic drawings.

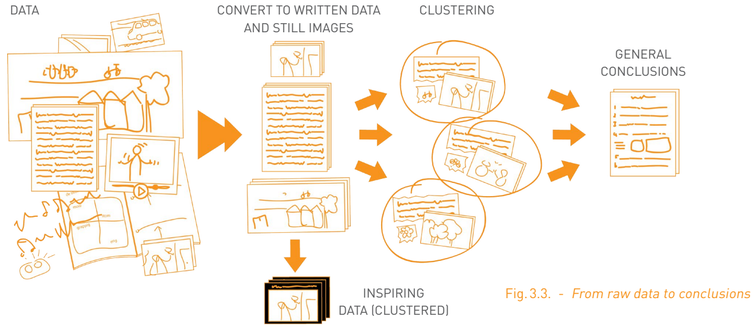


Fig. 3.3. - *From raw data to conclusions*

Participants and location

Most of the participants were 7 or 8 years old, female and in grade 4 or 5. Appendix L shows the profile of all participants. The low amount of male participants can be explained by the fact that there were less boys in the participating classes. Additionally, the booklets handed out to boys were returned (relatively) less often.

Although the schools were located in neighbourhoods in Delft with mainly urban, stacked residential streets, only a small amount of the participants appeared to live in this type of street. Most of the children come from different neighbourhoods, and live for example in (stony) single-family residential streets, in a flat in the greenery or even outside of Delft. For most of the assignments of the booklets this will not be a problem, since the questions are quite general. Nevertheless, the different types of streets/neighbourhoods are taken into account when presenting the research results. Comparing the answers of the children that live in different types of streets might show some similarities/differences between the types of environments. Additionally, attention will be paid to the difference between the answers of boys and girls, although the answers of the boys might not be very representative due to the small amount of male participants.

Playing: When and where?

Most of the participants that filled in the booklets play outside 'during school time' and 'between school and dinner'. 'After dinner' was also mentioned a couple of times, but 'before school' was filled in by only two of the twenty participants. The participants frequently answered the question "when do you play outside most often" with "between school and dinner" or with "during the weekend", "when I'm free" or "during holidays."

The location of play differs a lot, but seems to be either the schoolyard (school or child care facility) or some kind of playground outside the borders of the school. The schoolyard was mentioned most often, followed by the playground. Other locations of play that were written down were the soccer field, the grass field, the yard, the neighbourhood, the park, the square, the trampoline and the climbing frame. The described location of play is often near the house of the participant.

Answers that participants gave on the question "are there places where you would like to play more often, but where you cannot or may not go?" are also quite diverse. Places that were mentioned are playgrounds/ parks that are relatively far away (varying from a couple of streets to a couple of neighbourhoods) and "the street". The reason for not being able to play there mostly has something to do with the distance or with having to cross a dangerous street. Some participants mentioned other issues, like not being allowed to go into the elevator alone (in flat), loitering teens or having no time.

The only nine-year-old participant mentioned a place further away and gave another reason: "the Drievliet amusement park, but it is too expensive".

Although it is not possible to give an absolute playing radius with the results of the booklets, it is clear that the radius is limited to places near the house, or within the borders of the schools/child care facilities.

Playing: With whom?

The participants mostly play with 1-4 other children, although the numbers differ from 1-2 to 4-10. There does not seem to be a link between the type of neighbourhood the participants live in and the amount of playmates.

Of the 17 girls that filled in a booklet, 9 said they prefer to play with only girls. 8 Said they prefer to play with both girls and boys. Of the 3 boys, 2 said they prefer to play with only boys and 1 said to prefer to play with both genders. It is not possible to say if this division is representative for the target group. It is clear though that not all boys and girls prefer to play with only their own gender or only with the other gender, and that for girls this preference is about fifty-fifty.

Fig. 3.4. - *Examples of the booklets (front page)*

Playing: Experiences?

The booklets contained an assignment in which they had to write or draw whatever came to mind when thinking about playing outside and six given words. Since every participant has its own experiences and preferences, this resulted in a long list of associations. To make clear which associations where shared more often than others, 'wordclouds' were made. These can be found in Appendix M and as example in Fig. 3.6 on p.44.

Fun is often associated with climbing frames, other types of play (attributes), and a couple of times with being outside itself (nature, fresh air, flowers, beach, and space are mentioned). Multiple participants did fill in something with the word 'fun', but wrote 'nothing' in the boxes of the other words. Apparently they have stronger associations with the word 'fun' and 'playing outside' than with the other words.
Nevertheless, many participants did write down more associations:

- 'Falling' is most often associated with dumb;
- 'Being alone' with boring;
- The keyword 'difficult' and 'exiting' brought up a lot of different associations besides 'nothing';

- The word 'crazy' brought up least associations, and most of the associations were not very specific, like 'act crazy' or 'there are strange places'.

Routes: Which routes and ways of transportation?

The most common route that the participants take is from house to school (mentioned by 18 out of 20 participants). This is followed by the swimming pool (12), friends (11), shops/supermarkets (11) and playgrounds/play parks (10). All answers can be found in Fig. 3.5. Some of the locations were written down multiple times by one participant (a participant did for example draw the route to 3 different friends), but this is only counted as one in Fig. 3.5.

Additionally, some of the participants only drew the buildings and locations on the map, making it difficult to see what the function of for example buildings is. Both children that did not put 'school' on their maps did draw buildings, but it is unclear if this is for example a friend's house, a school or the library. Therefore they were not taken into account when counting the results.

The booklet also asked the participants to write down which routes they take most often, and which are only taken once in a while. As could be expected, school was the number one route. After that, the results were very diverse. Playgrounds, sports, friends, music lessons and the swimming pool were all

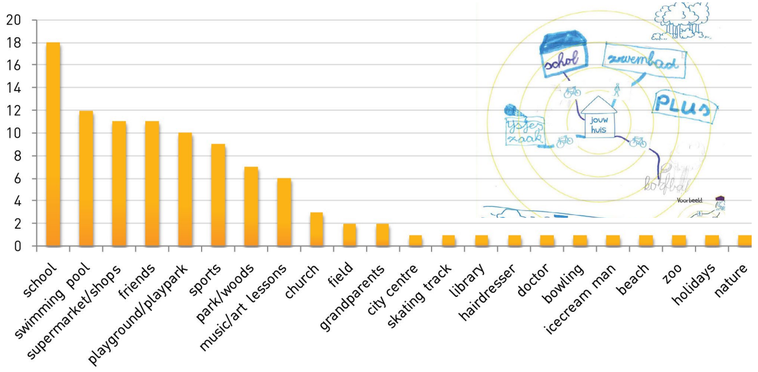


Fig. 3.5. - *Results of drawn map and an example*

mentioned a couple of times. Besides sports, these were all also mentioned (by other participants) for the routes that were not taken very frequently. Also, locations that were not mentioned before, like the movies and another city, suddenly came up.

The medium for transportation seems to be more dependant on the distance than on the type of location. In general, the participants cycle to school more often than they walk to school, and only two said to be brought to school by car. Friends are reached slightly more often by foot than by bicycle, just like playgrounds and the supermarket/shops. The swimming pool and sports are often a little further away, resulting in the bicycle or car as main transportation method. But again, a few of the participants live next to their sports or the swimming pool, and therefore go there by foot.

Routes: With whom?

Participants are often allowed to walk alone to places within the radius of a couple of streets. This is mostly a friend's house or a nearby playground. As described earlier, dangerous streets are a big restraint in the participant's mobility. Some participants can cycle to school or a friend alone, but parents or older brothers/sisters are often present when going to a location.

Routes: Experiences?

Similar to the playing experiences assignment, the participants had to draw or write down their associations when thinking about walking/cycling outside and given keywords. These associations are again presented in wordclouds, which can also be found in Appendix M. Although the results are very diverse, some associations are shared more often:

- 'Cycling', the 'swimming (pool)' and 'the bridge' are associated with fun;
- 'Crossing dangerous streets' and 'traffic lights' with dumb;
- 'Nature' (trees, animals, flowers and plants) with beautiful;
- 'Crossing dangerous streets/bridges' and 'driving up hill' with difficult;
- 'Cars, busses and trams' and 'crossing dangerous streets/junctions' with scary;
- 'Nothing' with crazy, but some varying other things were mentioned as well.

'Playing' on a route: Does it occur and how?

When asking if the participant ever plays along a route, many participants did not know anything or said that they would just walk or cycle. Nevertheless, some games or occupations where described. Four participants said they like to race on their bicycles, sometimes with others. One of them did this because the road to his soccer club was made of asphalt, making a nice surface for racing. Another mentioned the market square as the place for a race, because of the size. A different participant did not describe bicycle races, but just wrote down 'competition.'

The other answers are various:

- Climbing or somersaulting on a frame (described 3x)
- Playing in a rain puddle (and get wet) (2x)
- I spy with my little eye (2x)
- Talking/playing with other children (2x)
- Make cartwheels (1x)
- Make up a story (1x)
- Hopscotch (1x)
- Play with a ball (1x)
- Not walking on the borders of street tiles (1x)
- Playing horse on my bike (1x)
- Peeking if the neighbours are home (1x)
- Scare pigeons away (1x)
- Singing softly (when I'm bored) (1x)
- Counting broken streetlights (1x)
- Go to a secret path (1x)
- Swimming (1x)
- Go down the slide (1x)
- Talk but you cannot not say 'yes' or 'no' (1x, by the 9 year old)

Although it is not very clear, it is noticeable that two of the three male participants mentioned bike racing, and the female participants (also in the 'experience' exercises) more often describe doing tricks/hanging in the climbing frame.

Fig. 3.6. - *Examples of the wordclouds*

Associations with routes and...

FUN

Associations with playing and...

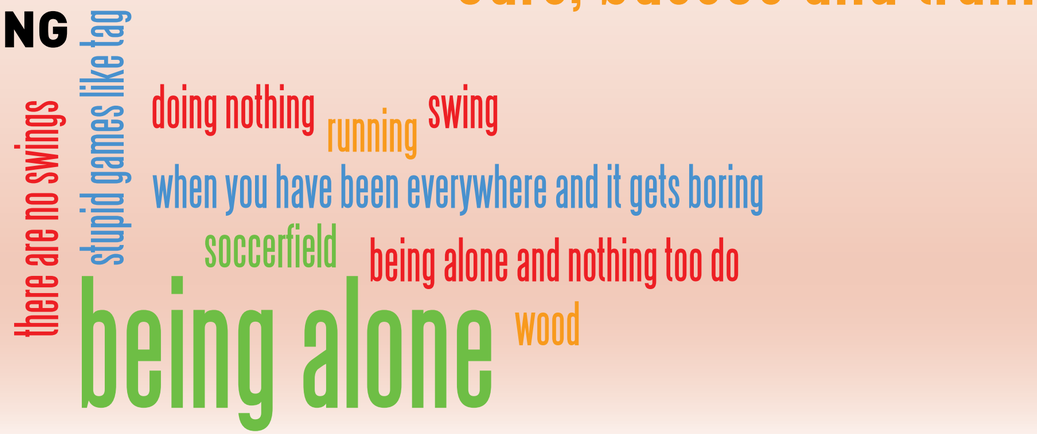
FUN

Associations with routes and...

SCARY

Associations with playing and...

BORING



3.2.2. Generative sessions

A total of 15 children participated in 5 generative sessions, of which one session was a pilot session:

Pilot session:

- 2 boys, both 7 years old, grade 4
- 1 girl, 8 years old, grade 5

Session 1:

- 1 boy, 8 years old, grade 4
- 2 girls, 7 and 8 years old, grade 5

Session 2:

- 1 boy, 8 years old, grade 5
- 2 girls, 7 years old, grade 4

Session 3:

- 3 girls, 7, 7 and 8 years old, grade 4, 5 and 5

Session 4:

- 1 boy, 7 years old, grade 5
- 2 girls, 7 and 8 years old, grade 4 and 5

The three children that participated in the pilot session did not get a sensitizing booklet up front, but one of the assignments of the booklet was added as a sensitizing exercise. After the pilot session, the first exercise (photo exercise) was slightly changed to make it more structured. The participants in the other sessions did not get a pile of keywords anymore, but an A2 sheet with 9 boxes with words in it. They had to pick out photos that they related with the words in the boxes and glue the photo above it.

The second exercise was also adapted a little: the drawn street was made slightly more like an urban, residential street, with more parked cars, smaller sidewalks and some stacked houses.

In general, the exercises gave quite some insight in the participants' thoughts and feelings. Asking questions during the exercises brought up topics that were not specifically included in the exercises.

The next paragraphs describe the answers for each previously formulated research question, although they are not all answered separately.

Route: Experiences and improvements?

In the first exercise, the participants were asked to link nine out of twenty photos to 'experience keywords'. Afterwards, the participants had to write down and explain why they chose these photos. Combining the results of all participants for each keyword resulted in collages, which can be found in Appendix N. An example is shown in Fig. 3.8 on p.48 and Fig. 3.9 on p.49. In these collages, the results from the pilot session are not included because these participants had more words to choose from and they did not explain of all images why they associated them with the words. The creations of the participants during the pilot session can be found separately in Appendix N.

It is interesting to see that the interpretation of the photos differed: on a picture with a bus with IKEA on it, some participants associated the picture with 'fun' (because of IKEA) while others associated it with 'danger' (get runover) or 'boring' (sitting in the bus).

Some associations were very similar for most of the participants. Close to all participants agreed that the street was not colourful enough, and that simply adding some colour would already help a lot. Flowers and graffiti were mentioned often as something with a nice appearance, although graffiti was also associated with 'not allowed'. Additionally it became clear that cars (both parked as well as driving) are a big obstacle for the participants when playing outside or walking/cycling a route. Participants often mentioned less cars or more safe places to cross the street (tunnel, zebra crossing or traffic lights) as an improvement of the street.

The associations that the participants had did not all point in one direction though. Where a couple of the participants mentioned hopscotch as one of their favourite things to do outside, others described it as 'boring' or 'childish'. This is similar with other types of playing, like the swing or the slide. Although some participants for example said that they used to like the swing but find it childish now, there is no clear connection between the age of the participants and the opinions.

Another contradiction was found with the picture of the traffic lights, which was often chosen as 'boring' or 'dumb' because of the waiting time, but was also appreciated at the same time for making it easier to cross the street.

Playing on a route: How?

As also resulted from the sensitizing booklets, some children occasionally play a game along a route. During the sessions, more games were brought up, although not all are specifically for playing along a route. Some were being played already, others were thought of during the sessions. The 'games' can be divided among a couple of themes:

- Competitions: Different kinds of competition were mentioned, like bicycle racing, running competitions, hopscotch competitions and long jump competitions. Especially cycling competitions already take place, but all could use some kind of stimulus on the street, like a starting/finish line and lines/boxes printed on the street. The wanted appearance of these 'prints' differs; one participant drew big circles to slalom around with a bicycle, another drew straight lines to illustrate what each runner's track was. And the long jump competition requires a sandpit according to the participant that thought of it.
- 'Cannot do ...' games: some other games that were described or drawn had one simple rule that had to be followed. For example: the street tiles are given many different colours, and while going from A to B, you can only walk/jump on the purple tiles. Or a rule that says you cannot stand on manholes because you will fall through them.

Fig. 3.7. - *Group drawing on a street*

- Street furniture games: some participants mentioned to play games with street furniture if something was added to it. One participant for example said: "if there would be rubber tiles underneath a street light, I would climb in it." Another said to jump from one concrete block on another, but said they should have colours. A third participant mentioned to sometimes use a bicycle rack for playing.
- Play element games: or games that require new 'furniture' to be placed on the streets (more than just replacing tiles or adding a print to the streets). These elements varied from entire roller coasters and merry-go-rounds to elements like a swing, a climbing frame or soccer goals. 'New' elements were also thought of, like a maze for playing hide and seek in, small walls for hiding behind, hurdles (again for competition) and statues of animals to climb and play on.

- Games without attributes: some of the games that were mentioned do not necessarily require any attributes or a specific type of street according to the participants. Examples are tag, or playing 'wheelbarrow' where one child holds another child's feet and one can thereby walk on its hands as a wheelbarrow.

The drawings that resulted from exercise 2 of the sessions can be found in Appendix I. Besides ideas about play elements, the participants also thought of solutions to make the street safer (and therefore more suitable for playing along a route) and better in terms of appearance.

Routes and playing: gender differences?

No extreme differences were found between the experiences and ideas of different genders. The male participants seemed to put more emphasis on the competition element in playing, and slightly more often drew soccer fields/goals during the sessions. Girls more often drew climbing frames (or the high bar) and hopscotch tracks. This corresponds with the findings in the analysis phase, where it was stated that boys often use/need more space for playing and are more competitive. The girls in the generative sessions however also quite often mentioned competition based games and sometimes said to like soccer too.

Routes and playing: differences in street type?

As expected, some positive and negative points that the participants mentioned had to do with the type of streets/neighbourhoods the participants live in. For example: some participants were satisfied with the amount of playgrounds or grass fields in their neighbourhood. These participants were mostly living in standard single-family terraced streets. The participants that reside in urban, stacked residential streets were often complaining about the amount of play opportunities in their neighbourhood.

The problems with traffic and cars in the neighbourhood seemed to affect a broader group of participants. This partially fits with the earlier descriptions of the types of streets, since close to all streets that score medium to high on the dimension 'urbanity' also score high on the dimension 'traffic' and 'dominance of parked cars'.

It however also can be due to the fact that the participants were thinking in terms of routes, and both schools that participated in the research were located in neighbourhoods with mainly urban, stacked residential streets. Many of the examples that participants gave that had to do with traffic were not connected to their own street specifically, but with a general problem or something along a common route (like a junction or bridge when cycling to school).

Fig.3.8. - *Example of sheets made by participants for exercise 1 of the generative session.*

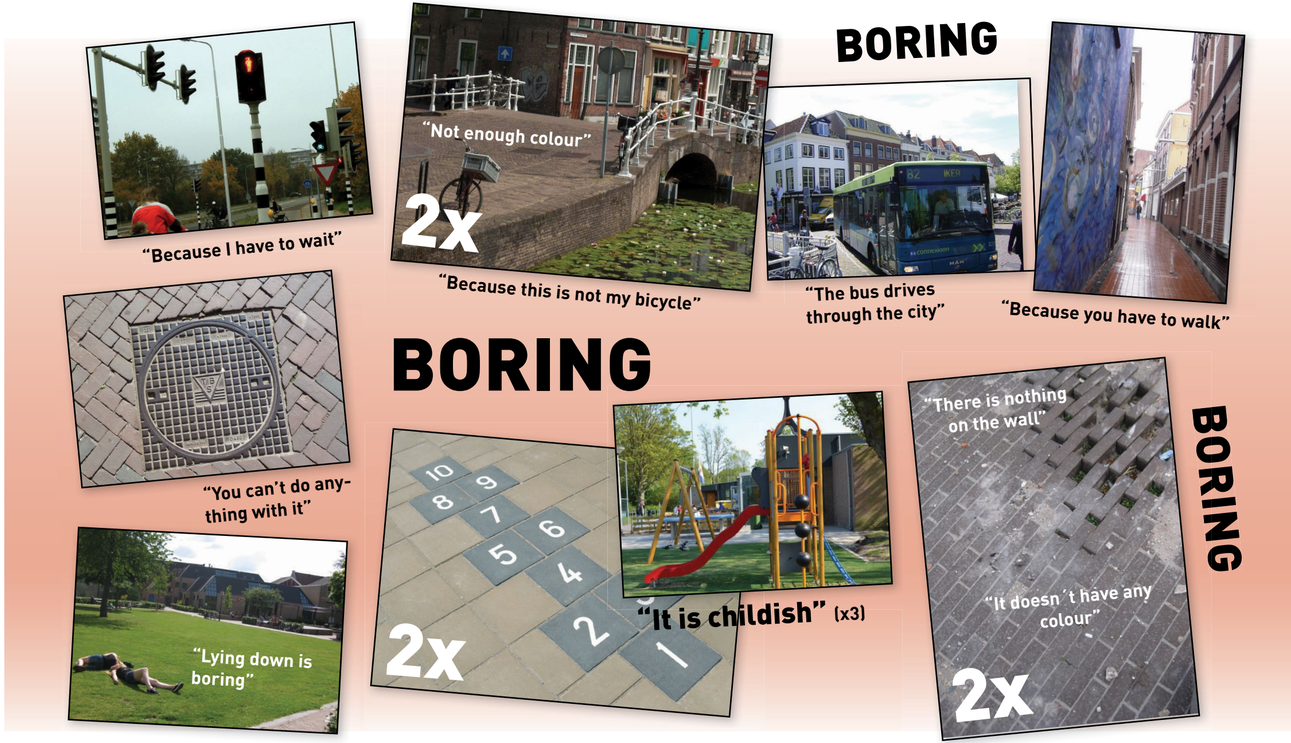


Fig.3.9. - *Example of collage from sheets made by participants for exercise 1 of the generative session.*

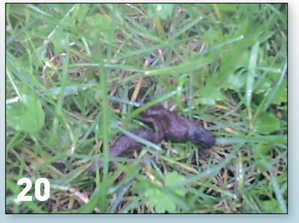
Fig. 3.10. - *Example of result of co-research (stills with quotes from group with film camera)*

STREET

"...a too low 'high bar', the seeswaw..."

"...and a climbing frame and not even, no, not even.. a swing. That is our big wish."

"we will walk towards the busy street, and here you see a very ugly alley."



"Oh no wait, there is often dog poop here on the grass. Let's see if we can find it. (...) Ah and here is one."

"So we want a sign that says 'no dog poop'." "And no dogs."
"...this kind of things, but then on big signs. Because you see very little blue and you cannot see what has been written."

"And I have to cross 2 streets before I get here! I want to have one closer to our home. And there is again a garbage container next to it, that cannot be the intention?

"And there, another car is parking. Not very important, but they often do it very wild."

"And there is the train."

3.2.3. Co-research

Ten children participated in the co-research. The participants' profiles can again be found in Appendix L. Because it was expected that the assignments would be rather difficult for the target group, some older collaborators were included. The participants were divided in 5 groups:

Group 1: Recording
- Collaborator: 11 years old, grade 8;
- Participant: 6 years old, grade 3.

Group 2: Photo camera
- Collaborator: 8 years old, grade 5;
- Participant: 8 years old, grade 5.

Group 3: Film camera
- Collaborator: 8 years old, grade 4;
- Participant: 8 years old, grade 5.

Group 4: Recording
- Collaborator: 10 years old, grade 7/8;
- Participant: 8 years old, grade 5.

Group 5: Photo camera
- Collaborator: 8 years old, grade 5;
- Participant: 9 years old, grade 6.

Another group was asked to conduct co-research with a film camera, but did not find time to do it.

Since the different reporting methods give different types of results, and the routes differ per group, the sessions will first be described per group.

Group 1

Group one chose the route from their house to the school of the participant. The recording and the answers on the assignment sheets are not very detailed, and the collaborator (older brother) sometimes prompts the answers in his questions.

For example (translated quote from the recording):
Collaborator: "Okay, where do you think it is difficult to cycle? At the bridge there?"
Participant: "Yes. Yes, up the bridge."

Nevertheless, some information can be deduced:
- To get to his school, the participant has to cycle through the city centre of Delft. The total route is about 0,6 km long. The participant cycles along some of the canals in Delft and passes shopping streets. Most of these streets can be categorized as urban, (stacked) residential streets. His house is located in the neighbourhood 'Centrum-Oost', the school is located in the neighbourhood 'Centrum-West' of Delft.
- The participant mentions cycling up the bridge as difficult, and off the bridge as fun (because of the speed).
- On his route he passes the Legostore, which he likes, except for the girl corner in the store (and girl stores in general). Sometimes he stops at the Legostore to look inside.
- Boring on the route is the part just outside the borders of the school. Why this is, is not clear.
- The participant feels safe everywhere along the route, and nothing is particularly dangerous, exiting, funny or weird in his opinion. The collaborator suggests the shops' mannequins and weird items in shops as being funny but the participant does not agree.
- The only thing the participant can think of in terms of playing along the route is cycling over all the manholes, slaloming around them or sometimes playing that he cannot touch them at all. (see Fig. 3.11)
- The participant says nothing has to be changed along the route: "It must stay exactly like it is".
- The participant, which is a little younger than all the other participants, mostly plays in his neighbourhood. According to the collaborator, he mostly plays 'army' and soccer.
- The location of play is the street, and sometimes at the playground one street away from their house. This is a very small playground in a car-free alley.

Fig. 3.11. - *During the route, the participant slaloms around manholes.*

Group 2

Group two chose the route from the participants house to school. The collaborator and the participant go to school together. The photos of the first and second assignment sheet can be found in Appendix O. These photos are mostly about their experiences during the route.

There are no photo results from assignments after the second assignment sheet, probably because of a camera failure. The participant/collaborator did fill in the sheets though. The photos and answers are described below:

- The participant lives in a stony single-family residential street in the city centre of Delft. He describes his own street as boring. The participant also mentions the sidewalks to be too short in his own street, which is difficult. However, he does think the sidewalks are a safe place.
- The ditch is found dangerous by the participant, crossing the street is exiting.
- The weeping willow is described as funny.
- The participant thinks school is dumb.

- During the route, the participant describes to frolic. He says not to play while going to school, he just cycles.
- Improvements for a place on the route that the participant comes up with are a wider sidewalks and a playground.
- The participant most often plays on a square, where he turns cartwheels. Here again, he would prefer a wider sidewalk.

Group 3

The third group also chose the route from the participants house to her school, but could not show the entire route because of the distance. The participant describes: "...it is slightly to far away. But I cycle there often when I go to school. And there is another busy street, and there are often cars driving there.."

The collaborator and participant made a total of 21 movies, showing fragments of the neighbourhood and some explanations that have been filmed inside. The duration of the movies varies from 2 seconds to about 2 minutes.

All movies have been transcribed and snapshots have been made of things the participant and collaborator point out. These can also be found in Appendix O. An example is shown in Fig. 3.10 on p.50.

The participants filled in some of the assignments at another time, because they were not able to do it on the way due to the rain. Therefore, the answers on the sheets do not all correspond with the recordings.

This is what was filled in on the assignment sheets:

- The soccer field is fun on the route.
- Dumb are the fences, the dog poop and the trash.
- The sidewalk is chosen as safe, the cars and train as dangerous.
- The fire basket is considered as exiting, although in the movie the participant describes it as dangerous because the house might burn down when using it.
- Nothing is described as funny.
- Fig. 3.12 shows how the participant would like to improve the neighbourhoods' playground. This also becomes quite clear in the recordings: most of the current play objects are boring and a swing and a higher high-bar would already be a great improvement.

Fig. 3.12. - *Improvement of the neighbourhoods' playground.*

Group 4

Group 4 decided to walk the route that the participant normally cycles to school. This group made a very clear recording, describing particularly the roads, traffic and junctions. Playing outside was not covered very elaborately in the recording, but it appears from what is written on the assignment sheets that the participant normally does not play along the route.

Below, the findings from the recordings and the assignment sheets are described:

- The participant and collaborator, which were sisters, live in a rather safe and quiet street, with merely standard single-family terraces houses. The participant feels safe in her own street.
- The fun aspect of the route is near their house, where the participant chooses to cycle via a small path with trees instead of taking the (same length) regular road. The path itself is liked because of the appearance with the trees, but is also described as funny because of the cute dogs that pass there.
- After this path, the route gets less safe: according to the participant there are many junctions that are busy (mainly with other cyclers) or where the participant does not have a good overview on the road. These junctions are brought up many times during the route. The participant describes different times that she almost bumped into another cycler, or when she almost got runover.
- The bridge that the participant has to cross during the route to school is considered as the most difficult and as exiting. This is because many people have to cross the bridge at the same time and change tracks while crossing, making it difficult to see.
- Nothing is considered as boring during the way.
- The difficult junctions could be improved by making the streets wider, and by trimming the bushes/trees. Also, a traffic light could help.
- When the participant plays, she mostly plays near her house, on the street/sidewalk or on the small playground, but that is often rather empty. She then plays hide and seek (behind cars and bushes) or for example on the swing at the playground. During the route she does not play, because she is cycling and has to pay attention to the road and other traffic. There is little time to play along the route, because of other cyclers for example.
- The participant mentions to often be relieved when she arrives at her school.

Group 5

The final group chose to walk from the participants' house to her hockey club. Although their assignment was to make pictures during the route, the collaborator and participant also made some short movies with their own digital camera. The photos of the first and second assignment sheet can again be found in Appendix O.

Results from the assignment sheets, photos and movies:

- The participant lives in the same neighbourhood as the participant from group 4. However, the route that they chose is different. During the route, group 5 walks through the neighbourhood, passes the playground and then walks via a road and a path to the hockey fields.
- The participant describes driving cars as dangerous, and crossing the street as difficult. Cars in general are associated with boring.
- The (wide) ditch around their neighbourhood is described as bad. This is because there is garbage floating in the water, like pieces of foam and a bottle.
- The participant thinks the heron next to the ditch is exiting, and made a movie of a small coot swimming in the ditch, in which she mentions how cute she thinks it is.
- The playground, close to the participant's house is associated with fun. Traffic signs are considered funny.
- The sidewalks are safe according to the participant, and if she could improve something on the route, she would make a zebra crossing near her hockey club.
- The participant mentions to chatter along the route besides just walking or cycling.
- The participant does not play along the route. Normally she plays in the neighbourhood, for example the game 'count to 10 in the jungle', a game that is a variation on hide and seek. This requires somebody that counts and good hiding places for the others.

3.3. Research Conclusions

In the following paragraphs, the results will shortly be discussed. After this, conclusions can be drawn. This is done according to the research questions that were presented at the beginning of this chapter.

3.3.1. Playing in the public space

The first set of research questions was about playing in the public space, varying from factual questions to the target group's experiences while playing. Below, the results are discussed, concluding in answers on the research questions.

Time of play

On school days, most of the children of the target group will play outside during school time and in the afternoon (after school and before dinner). 'During the weekend' or 'when I am free' was also mentioned frequently by participants, but it is unclear what time of day is the most occurring time of play on free days.

Location of play

The location of play differs a lot, but is either the schoolyard (school or child care facility) or some place near the participants' homes. The type of location is mostly dependant on what is nearby the house, but is often a playground, a grass field, a square or the street. The playground was slightly more popular than expected based on the analysis phase.

When looking at the places where the participants would like to play (more often) if they got the chance, distant playgrounds/parks are brought up and "the street." The reason for not being allowed/able to play here is either because it is too far, or because it is too dangerous. Both reasons mainly come down to having to deal with traffic and crossing dangerous streets.

The playgrounds in the neighbourhood are mostly small ones with only a few play elements for toddlers. The playgrounds that are mentioned are often bigger with play elements that are 'more fun'. What 'more fun' is understood to mean will be discussed in another part of the conclusions.

Playing on stones or a hard surface is disliked by some of the participants. A reason for this is the chance of hurting yourself when falling. 'Falling' is the main association with playing outside and the word 'dumb' in the booklets. Tripping over edges was also a common association with dumb during the generative sessions.

Type of play

From the generative sessions it appeared that playgrounds are often associated with 'fun' because it gives opportunity for climbing and clambering. Also in the booklets, climbing was mentioned often as fun, but also a few times as difficult. The downside of the current playgrounds however seems to be that most of the play attributes are too childish for the target group. They rather have something more exiting, that allows them to push their boundaries. This can for example be a play element with the opportunity for competition (who is fastest, highest etc.), or for training a certain skill (jumping further, going higher etc.).

Besides these types of play, activities like tag, hide and seek and hopscotch are also mentioned quite often as current play activities. These games do not require a lot of space or many attributes and therefore make a very good alternative if the 'fun' playgrounds or fields are further away. It might seem that the target group plays these games because there is nothing else to do, but this is not the case. When thinking about improvements for the street, the participants also came up with 'walls to hide behind when playing hide and seek', drew hopscotch tracks and circles for variations of tag. This implies that the games are not only popular because of their accessibility, but also because of the fun of it.

There are some types of play that are among the favourite games of a part of the target group, but are disliked by others. Hopscotch or the swing are examples of this. Both appear to be on the edge of becoming too childish for the target group: some participants really like it while others think it is boring or childish. No clear relation was found between the age of the participants and their opinions on this matter, but it does fit with the findings from the analysis phase about the target group in general. Most of the children are still in a transition phase, resulting in a diverse popularity of 'childish' games. Nevertheless, 'extreme' hopscotch-tracks (with another, more difficult configuration of the numbers/tiles) appeared to be appealing even for the ones that got tired of the normal tracks already. It might be that other types of swings and more challenging variations of other play attributes are more appealing for a bigger share of the target group too.

Other types of play that were mentioned to be liked by multiple participants were soccer, playing on the trampoline, doing cartwheels, bicycle races and doing mischief.

Play company

The company that the target group prefers while playing differs. It became clear that not all boys and girls prefer to play with only their own gender or only with the other gender, and that for girls this preference is about fifty-fifty. The amount of play mates when playing in the public space is about 1-4. 'Being alone' is one of the main associations of the participants when thinking about playing outside and the word 'boring'. Although it is likely that simply not being able to share the fun makes being alone boring, it can also be because of the lack of ways to play alone. In case there is no way to solve the lack of company, a solution can possibly be found in designing play elements for playing solo.

Play restrictions

One of the main restrictions of the target group is the playing radius: they are bound to play within a couple of streets around the house. As was partially found in the analysis phase too; traffic and dangerous streets are the number one reason for the target group to not being able/allowed to get to play opportunities further away. In the research, participants described a couple of times that playing outside gets boring when there is nothing to do, nobody around or when doing the same thing over and over again. Having more play opportunities within the range of a couple of streets from the house, or being able to get to places further away could solve part of this problem.

3.3.2. Routes

The second set of research questions was about the routes of the target group. Again, some factual questions were asked during the research and insight was gained about the experiences of the target group while walking or cycling a route. The next paragraphs discuss the main findings on this topic and present the conclusions.

Common routes

The most common route of the target group is from house to school and back. Although only 18 of the 20 participants of the booklets mentioned this route, it can be assumed that everybody takes this route almost daily. After this, the routes to friends, sports, music lessons, playgrounds/parks and the swimming pool are most commonly taken.

The way of transportation differs, but in the rule the target group walks when the destination is within the range of a couple of streets, cycles when it is a little further away and is brought by car when a location is more than about 1 to 2 km away.

The target group often has one or more friends, some kind of playground/field/square and a shop/supermarket within walking distance. School is mostly a little bit further away and therefore slightly more often reached by bicycle. The swimming pool and other sport clubs are most often reached by bicycle or car, because they are further away for most participants. This is logical when looking at how often certain types of locations occur: there are less swimming pools than playgrounds in a city, making the chance of living close to a swimming pool smaller than living close to a playground.

Company on routes

The target group is often allowed to walk alone to places within the radius of a couple of streets. As described in the previous paragraph, this is mostly a friend's house or a nearby playground.

Some children of the target group can cycle alone to school or a more distant friend, but going further away often brings the problem of having to cross (dangerous) streets or cycling on bigger roads. Therefore, parents or older brothers/sisters are often accompanying when cycling to further locations or nearby locations with the necessity to cross a street. To school, this more often is a parent (appears from co-research and generative sessions) but to play locations this more often is a brother or sister. Sometimes, the target group is allowed to go a little further away when being in the company of a friend.

Experiences on routes

Although all experiences that were written, drawn or recorded during the research can be inspiring and guiding while designing, some general conclusions can be drawn:

- Nature is liked by the target group, and is one of the main things that is associated with beauty on the routes. This can be nice paths, trees, flowers, (harmless) animals or plants. However, dogs are sometimes considered as scary, and the target group is sensitive for disturbed nature: trash in the grass or water has a negative influence on their experience of a route.
- Drawings in tunnels, graffiti and statues are also mentioned a couple of time as nice or beautiful.
- Almost all participants of the research agreed that more colours would improve the routes. Although this does not necessarily improve the opportunity for play, it is one of the first things that is brought up when making the streets better.
- Cycling is liked by most of the participants. And even though going up hill is considered as difficult, bridges/tunnels are liked because of the high speed that can be reached.
- Negative experiences on routes mainly have to do with traffic and vehicles. Crossing (dangerous) streets is considered as dangerous and difficult, and busses, trams and cars as scary or dangerous. Traffic lights are liked because of the provided safety, but are disliked when having to wait. This negative association appears to be stronger than the positive one. When thinking about solutions of making crossing the street safer, traffic lights are brought up sometimes, but zebra crossings are preferred.
- During the sessions, the participants came up with different suggestions to make the street safer. This varied from rubber tiles to car-free zones and zebra crossings in the shape of real zebras.
- Crowds or busy roads are also disliked, because it is difficult to get through or cross. Bushes and sharp bends in paths close to a junction make it difficult to see approaching traffic, causing dangerous situations.
- The sidewalk is associated with safety. In some situations, a wider sidewalk would however be appreciated.

3.3.3. Play along a route

It appeared from the booklets, the sessions and the co-research that a lot of children of the target group sometimes play along a route. There are many though that never play when cycling or walking a route, or at least could not think of it during the research. During the sessions and the co-research, some ideas and suggestions were given by the participants to make it easier or more fun to play when walking/cycling a route. The current situation and possibilities will both be described in the following paragraphs.

Current ways of playing along a route

Even though there were not that many participants that described a way of playing along a route, the games that were brought up were very diverse. It appears that every child thinks of a game that suits with the particular street he/she walks or cycles through. Therefore it is quite hard to give a succinct conclusion without generalizing too much.

Still, some equalities can be found in the described games:

1. Multiplayer games
   - Physical competitions, like bicycle racing, were mentioned multiple times in the different researches;
   - Mental competitions, like 'who can talk the longest without saying yes or no', or 'I spy with my little eye';
   - Other multiplayer games, like doing mischief, make up stories together, playing with a ball or talking with each other.
2. Solo games
   - General physical games (do not require a certain element of the street), like making cartwheels, climbing, cycling, frolicking or just running around;
   - Other physical games (require an element of the street) like slaloming around manholes, hopscotch on the street;
   - Mental games, for example playing horse riding while riding the bicycle, counting broken streetlights, singing, not being allowed to step on the edges of tiles;
   - Occasional games (requires something that is dependant on certain conditions) like scaring away pigeons, jumping in puddles or only walking on shadows.

It is interesting to see that many of these games are done solo, while playing outside alone is considered as boring and dumb.

New ways of playing along a route

During the session, new ways of playing along a route or in the street were made up. These can also be categorized:

1. Competitions
   - Games with an element of competition in it are generally liked. Both girls and boys brought this up during the research, but it is not clear if both genders like the same aspect of the competition. Winning might be an aspect that is liked, but it can also be about pushing boundaries or testing oneself;
   - Examples that came out of the session are bicycle races, hopscotch competitions and long jump competitions;
   - The participants drew or described different adjustments in the street to make these competitions possible, like start and finish lines, a sandpit or hurdles.
2. 'Cannot do ...' games:
   - These games have one simple rule that had to be followed, like some of the 'mental games' that were described earlier. The games can be done with multiple players or alone;
   - For example: the street tiles are given many different colours, and while going from A to B, you can only walk/jump on the purple tiles. The participants thought of making different levels of difficulty with different colours of tiles.
3. Street furniture games:
   - These games make use of current street furniture, with a slight adjustment making it keep its old function but also allows playing;
   - This can for example be a streetlight which is also a climbing frame, or a row of bollards as part of a balancing game.
4. Play element games:
   - Games that require new 'furniture' to be placed on the streets (more than just replacing tiles or adding a print to the streets);
   - Many of the ideas of the participants were quite extreme, like a roller coasters or a merry-go-round, but simple elements like a swing, a climbing frame or soccer goals were also described;
   - 'New' elements were also thought of, like a maze for playing hide and seek in, smaller walls for hiding behind, and statues of animals to climb and play on.

3.3.4. Inspiring data

The conclusions described in the last paragraphs are rather general conclusions. For the design phase it is also very useful to look at the more specific research results, like the drawings that were shown in the appendices, quotes from the participants or fragments from movies.

As was shown already as 'inspiring data (clustered)' in Fig. 3.3 on p.40, the most inspiring input from the target group is translated to inspiration sheets. These can be found in Appendix P. An overview of some of these sheets can be found in Fig. 3.13 on p.58.

Fig. 3.13. - *Examples of the inspiration sheets.*

4. RECAP | A short recap preceding the design phase

Before starting with the design phase, it is useful to shorty look back on the previous phases. Where did this project start, and what is known at this point?

The scheme that was shown in the introduction of this thesis (Fig. 1.2) already indicated what could be expected in this thesis. Here, the problem definition will be repeated and completed with findings from further analyses. This is followed by a summary of the conclusions of the other analyses and researches. This way, the full package can be taken to the design phase, instead of little fragments that are scattered throughout the thesis.

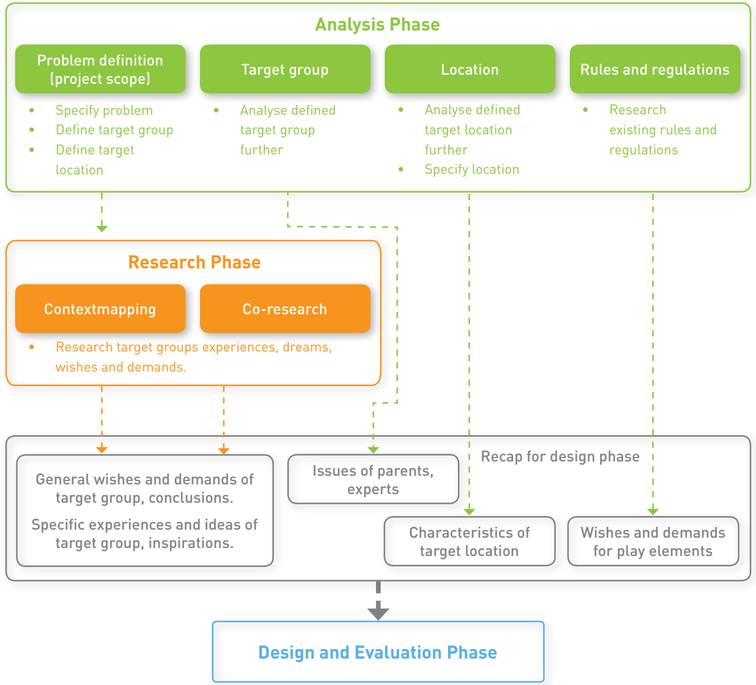


Fig. 4.1. - *Recap: where are we?*

4.1. Recap of Problem Definition

The problem that Jantje Beton tries to solve is satisfying the need for public spaces where children feel free and encouraged to play and be active in. One of the problems that is encountered when trying to solve this problem, is that most solutions are generated from an adults point of view and therefore do not match with the child's wishes and demands.

This project contributes to solving both problems, by focussing on how to design play opportunities for the public space while using child participation in the process. Play routes were chosen as a test case for the project.

4.1.1. Target group

The target group for this project are children in grade 3-5 (age 6-8) that live (close to) extremely urbanized neighbourhoods in the Netherlands. This target group appeared to be the most suitable, because they have the most limitations with playing in the public space. The restrictions mainly have to do with safety issues (and parents therefore not allowing them to go outside alone or too far) and available space/play opportunities.

4.1.2. Target location

The extremely urbanized neighbourhoods were analysed further and it appeared that 'urban, stacked, residential streets' are most common in these neighbourhoods. Therefore, these were chosen as main target location.

4.2. Input for Design Phase

The input for the design phase are mainly the results from the contextmapping research and the co-research. Nevertheless, the characteristics of the target location play an important part, and some issues of parents, and the government (rules and regulations) need to be taken into account when designing. Here is an overview:

4.2.1. Inspiration sheets

The quotes, drawings, photos and videos from the contextmapping research and co-research are the most important for getting to solutions that are based on the target group's wishes and experiences: this is direct input from the target group. The data appeals to one's imagination much stronger than the general conclusions and make child participation such a powerful method. As written earlier, the most inspiring input from the target group is translated to inspiration sheets, which can be found in Appendix P.

4.2.2. General wishes of the target group

Besides the specific experiences and ideas of target group, general conclusions could be drawn in the research phase, about the general wishes and demands. Since the inspiration sheets do not necessarily cover all the data from the research phase, this information is important too. These conclusions were written in the last paragraphs of the previous chapter, and therefore will not be repeated here.

4.2.3. Characteristics of the location

The (more detailed) characteristics of the 'urban, stacked residential street' and some main characteristics of the other street types that (less frequently) appear in extremely urbanized neighbourhoods were described in the analysis phase. To make it easier to design for the urban, stacked residential streets and take into account its general and varying characteristics, a collage of these streets was made. This offers more inspiration than a list of characteristics. The basis for this collage are the stills (made in extremely urbanized neighbourhoods) from the location analysis. The collage can be found in Appendix Q.

4.2.4. Rules and regulations

The rules and regulations were shortly described in the last part of the analysis phase, and summed up in Appendix F and Appendix G. For the first ideations, these rules and regulations should not be too much of a barrier. Because of the limited space in most streets, it is useful to know how much space certain solutions might take. For example, safety/falling zones of at least 1,5m on each side of the element are required when the climbable area is higher than 60 cm. Most of the other requirements are however more important in the detailing phase and thus are not very important yet.

4.2.5. Issues of parents and experts

Safety was found to be the number one issue of parents and experts in the analysis phase. This is one of the main reasons that the target group is not allowed to go outside or to certain places. Children also indicated that this was one of the limitations of playing in the public space. Therefore, it is important not only make children feel safe, but also make sure the parents feel that their child is safe too.

5. DESIGN PHASE | Translating the analysis and research output to play route concepts

The recap chapter summarized the previous phases and gave an overview of the input for the ideation phase. The base for the ideation phase is mainly the inspiration sheets, with as backup the general conclusions of the research, input about the location, the rules and regulations, and the available input of parents and experts.

This chapter shows the outcome of the ideation process, followed by an evaluation of these concepts with the target group and adults. After that, two concepts that are worked out to a slightly higher level are presented, taking the outcome of the evaluation into consideration.

5.1. Design Setup and Ideas

As the themes of the inspiration sheets already indicate: there are different starting points for generating ideas for (parts of) the play routes. The most obvious are the play ideas that the participants of the contextmapping sessions and co-research proposed themselves, but there are more hidden experiences that can be used to generate ideas with. For example a certain fascination for objects on the street, or a frustration with something that does not even have to do with routes or playing.

To show what input of the research (or one of the analyses) is used for each idea, the 'main inspirations' are presented next to the idea itself. Fig. 5.1 shows an example of how an inspiration leads to an idea. Also, an example of the idea in the street is given for some of the ideas, to show what it could look like.

An overview of the entire range of ideas (filtered to a certain extent) is shown on the next two pages. They are shown full size together with a short explanation, and the 'main inspirations' in Appendix R.

The ideas are divided into three main themes:

- Prints (blue): Which are ideas that do not change the street physically, but change the appearance by adding a drawing/pattern/shape.
- Objects (orange): Which are ideas that change the street physically, by adding objects like a play element or blocks.
- Safety (green): These ideas do not have so much to do with playing, but focus on making the route safer.

Example of inspirations:

"The tiles shine pretty"

"I think playing is exiting when every day is different"

"I play tag around the hopscotch track"

Translation:

1. Why do the tiles shine? Because they are wet. Rainy weather is necessary for the shininess to appear.
2. The target group likes variation in playing. How can this be achieved? By making it dependable on a changing condition outside... like the weather.
3. Maybe there is paint or a certain type of material (type of tile) that glows or changes colour when it is wet...?
4. Found! But what kind of game? New 'obstacles' for playing tag? Or an extended hopscotch track? Or maybe a trail to follow? Lets start a brainstorm with this. That will result in ideas!

Fig. 5.1. - *Example of how an inspiration leads to an idea*

Overview of ideas:

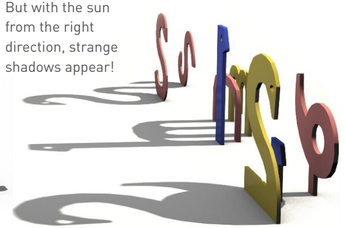
IDEA 1: Animal Behaviour — Print

IDEA 2: Tile Challenge — Print

IDEA 3: Shadow Play — Object

On a random moment of the day, the objects are just objects...

But with the sun from the right direction, strange shadows appear!



IDEA 4: Rain Play — Print

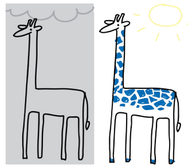
These prints are only visible when the tiles are wet (during or after rain). It is now used for advertising, so why not for play?

This example comes from www.graffitinetwerk.nl

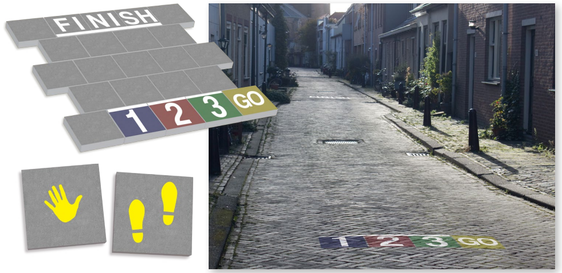
Overview of ideas:

IDEA 5: Sun Print — Print

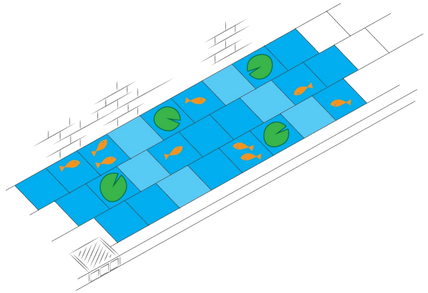
By using UV sensitive paint, these figures only show when the sun shines...



IDEA 6: Competition Play — Print



IDEA 7: Decoration Print — Print

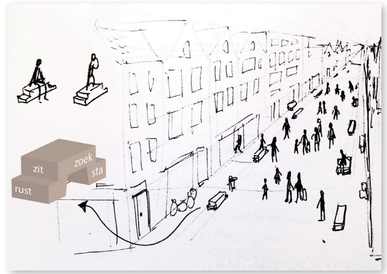


IDEA 8: Crowd Trail — Object

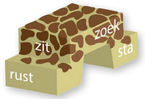
This idea creates a light path when it is very crowded. It can be used as guideline, but also make it less annoying to have to look at the floor and every one's feet all the time.

No people walk on tile — Some people walk on tile — Many people walk on tile

IDEA 9: Perspective Blocks — Object



This object is meant to sit on, stand on or play on. It allows children to look over crowds, or just play or rest on.

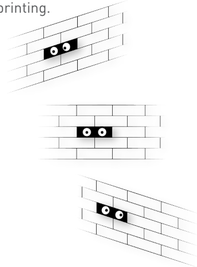


IDEA 10: Connected — Print

Puzzles on the street can evoke playing. These prints can be combined with idea 4 or 5.

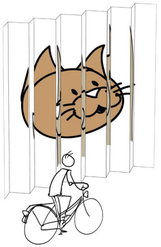
IDEA 11: I Spy with my Little Eye — Object

The eyes follow you, using lenticular printing.



Example of big scale (only two images), which can be placed against the wall, or in a tunnel:

From the left:

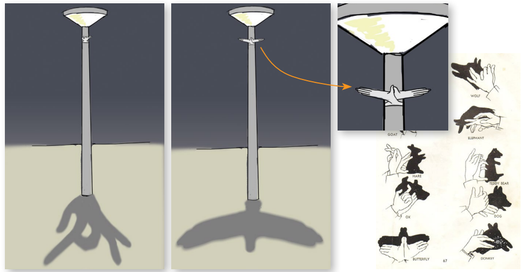


From the front:

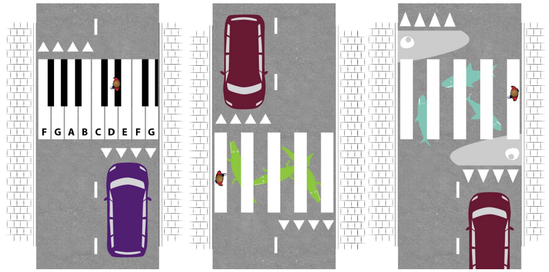
From the right:

Overview of ideas:

IDEA 12: Streetlight Shadow — Object

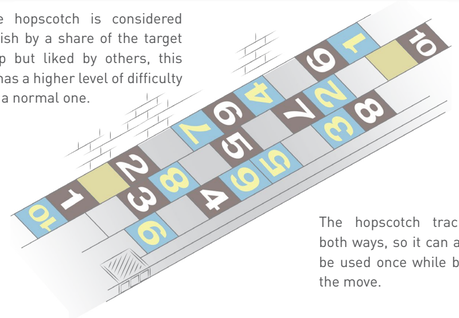


IDEA 13: Creative Crossing — Print



IDEA 14: Hopscotch Challenge — Print

Since hopscotch is considered childish by a share of the target group but liked by others, this one has a higher level of difficulty than a normal one.



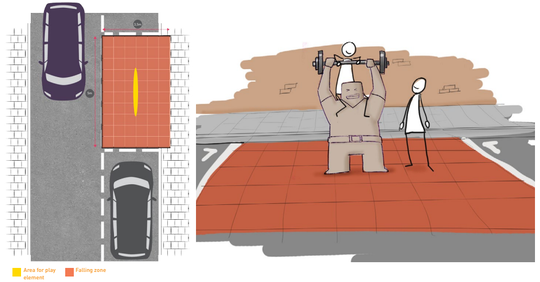
The hopscotch track goes both ways, so it can also just be used once while being on the move.

IDEA 15: Flower Bins — Object

Many children indicated that they like flowers and nature, but do not see them often in and around their street. So why not transform 'ugly' objects that have no function anymore into nice flower bins?

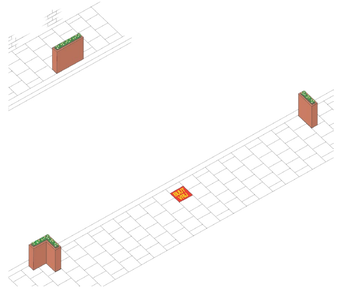
IDEA 16: Stepping Stones — Object

IDEA 17: Play Park — Object

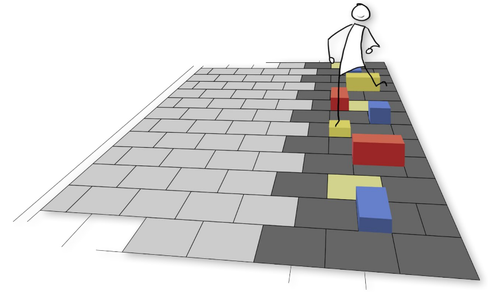


IDEA 18: Hide, seek and more — Object

Hiding behind cars or in alleys is often possible, but especially the newly built neighbourhoods are very plain. Placing small walls that are also flower tubs can solve this and add some colour/ nature to the streets.



IDEA 19: Stepping Stones 2 — Object



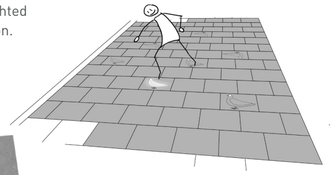
Overview of ideas:

IDEA 20: Seek and Find — Print

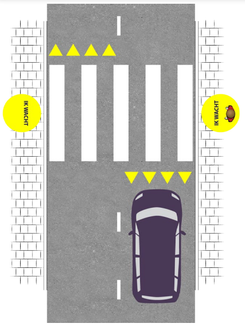
This idea is based on seeing and searching for the small things: 20 pictures of frogs are hidden in the street, and the challenge is to find them all.

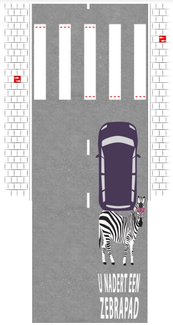
IDEA 21: Pigeon Play — Object

When standing on a pigeon, another one lights up. Then, standing on the lighted pigeon will activate another and so on.



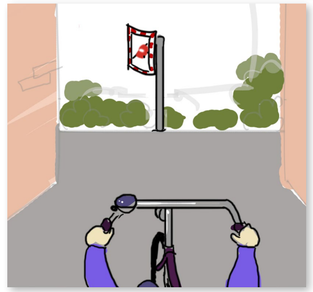
IDEA 22: Careful Crossing — Safety





IDEA 23: Concrete Creativity — Print

IDEA 24: Mirrors — Safety



An issue with cycling is more traffic to deal with and less control of the situation. Vision is not always optimal because of walls or trees.

IDEA 25: While Waiting.. — Safety

Making waiting more fun or more interesting can be done in different ways. Showing the amount of traffic passing gives insight in the usefulness of traffic light and makes waiting more interesting.

Below: an animation in the red light, indicating how long the waiting time still is: the shorter, the happier the smiley:

5.2. Design Evaluation

To see if the design ideas are liked by the target group, and indirectly check if the child-participation worked as it should, an evaluation is set up. In this setup, some of the participants of the earlier conducted research are asked about their opinions on the designs. Additionally, some adults are asked for their opinions, to gain insight about their point of view on the designs. This is important because the parents in the end are the ones that have to allow their children to use the ideas. Additionally, it is interesting to see where the opinions of children differ from those of adults (even when they know the children pretty well).

Only a selection of the ideas will be evaluated to keep the evaluation simple. The ideas in the category 'safety' were for example left out to make sure the ideas could be compared well with each other, and the range of ideas was brought back to 9 ideas. This number is big enough to give an impression of the variety in ideas, but at the same time small enough to keep the evaluation clear and simple.

If the goal of this project was to actually implement the ideas in the streets, all the ideas should of course be evaluated (for example per category). In this case, the evaluation serves as an example on how to set up and execute an evaluation, and learn what ideas were good translations of the children's wishes and which need further improvement.

5.2.1. Evaluation setup

The evaluation will take place on one of the research locations, and be conducted with 3-4 children and 2-5 adults. After the evaluation, it should be clear what ideas are preferred, and which ones need some improvement. Some ideas might be dismissed, and/or new ideas could have been generated during the evaluation. These outcomes will be translated into general recommendations. The setup of the evaluation is shortly described below:

A session with a group of 3-4 children (participants from the earlier research). This session is basically built up like this:

- Assignment 1: First impression (with a selection of 9 ideas): where did it come from, what is it, and what would you do with it? Clear images are necessary for this, so the participants will understand the context of the designs. The 'where did it come from' is included to show the link with the research. It is interesting to check if this influences the rating of the ideas in Assignment 2;
- Assignment 2: Ranking the ideas (individually): the participants put pictures of the ideas in an order from good to bad. The materials for this can be found in Appendix S. Good, average and bad are described respectively as "I would like to have this in my neighbourhood the most", "I would like to have this in my neighbourhood a little" and "I least like to have this in my neighbourhood". Besides placing the ideas in order from good to bad, the participants shortly write down what makes the idea good or bad. Discussing this will show what is liked and where improvements are necessary. As described earlier, is interesting to check if the participants like ideas that are based on their input during the research more than other ideas;
- Assignment 3: The children are asked how they would improve the ideas that are ranked medium/low. If there is time, the children can also brainstorm about possible changes/additions to other ideas.

A short interview with adults, in which the ideas are evaluated according to visualisations. First, a short explanation of the ideas is given (same selection as the evaluation with the children), after which a couple of questions are asked about each idea:

- Use of the idea: What do you think a/your child (of the target group) would do with this? Do you think they would like it?
- Safety: Do you have any concerns about the safety of this idea?
- Appearance: How well does this idea fit in your neighbourhood? What do you think of the appearance?
- Improvements: What improvements can you think of (or what should be improved in your opinion)?
- Ranking: Which (1-3) ideas do you like the most, and which ones (1-3) do you like the least? Why?

5.2.2. Evaluation results - children

The results of the evaluation are presented below. First, the evaluation with children will be discussed, followed by the interviews with the teacher and parents in the paragraphs after. Then, conclusions will be drawn for both evaluations.

Four children (2 boys, 2 girls) participated in the evaluation session. They had all participated in the research as well: 1 in a session, 1 in co-research (photo camera), and 2 in both a session as the co-research (video camera). Although this was quite some time ago, they clearly remembered what they did and why.

Fig. 5.2. - *Two participants proudly showing their results to the rest of the class.*

Assignment 1

The 9 selected ideas were presented shortly, by first showing some input of the research (quotes, drawings, photos) and explaining what was shown on the images. For most of the ideas, the participants immediately expressed what they would do with it and if they liked it or not. They seemed to find a connection with most of the input of the research, even if they were not the ones that gave the input during the research. The first reactions were positive, and the participants were positively surprised by the ideas since they were not regular playground items. The reactions on the ideas will be discussed per idea when describing assignment 2/3.

Assignment 2 and 3

Because assignment 1 and 2 took longer than expected, little time was left for assignment 3. The discussion and improvement of ideas did however take place during assignment 2, so the results of the ranking and improvement parts will be presented here both. An impression of the results of assignment 2 can be found in Fig. 5.2.

In general, all the ideas were liked by most participants, so the ideas that were put underneath "I least like to have this in my neighbourhood" were actually quite positively rated. Two of the four participants were good friends, and although they were asked to do the assignment individually, one of them silently copied the other a little bit. Another

participant executed the assignment completely by herself, and her ranking order was clearly different from the ones of the other three, that discussed a little bit while doing the assignment. This is important to realise, since it makes clear that the selection of the 'best' ideas should not be based on the ranking orders of the participants alone, but mainly on their explanation why one idea is better than another one. The results of the participants can be found in Appendix S. The evaluation of each of the 9 selected ideas is described below. The numbers of the ideas refer to the numbers in the earlier presented 'overview of ideas'.

- IDEA 1: Animal behaviour

  The first impression of the participants (during assignment 1) was positive. One of the participants immediately mentioned that you could also use the games for competition and pointed out a finish line. The others simply said that it was a nice idea. In assignment 2, the idea was however rated relatively low. One participant explained that she would probably get bored soon by the suggested games, two others rated it low because they were afraid that they would be late for school (or other appointments) because

of it. The fourth rated it slightly below average, but wrote down:"I like the assignments, they are fun and cleverly done".

- IDEA 2/19 (combined): Tile challenge

  This idea was partially based on mischief and coloured tiles, and the participants again confirmed that they liked mischief a lot. One participant described a game, in which you could only step on one or two colours, and not on the banana and poop. The others agreed that this would be a fun game, but all participants had different preferences for the colour on which they could step. In assignment 2, this idea was rated quite high by one of the participants, average by two others and quite low by the fourth. Reasons: "you can fall on the ground and poop" (making it fun), "I normally do this too, which is fun", "you can play games with it, like tag on one colour", and "I probably get bored soon" (rated low). Later on, it was suggested that the coloured blocks and tiles would light up (just like the pigeons in the other idea) so you would know on which block you could (or could not) step.

- IDEA 3: Shadow play

  The participants immediately recognized the numbers and letters, and one suggested that you could climb on them. After explaining that the shadow shapes appear only when the sun shines from a specific direction, one participant replied: "I'm going to faint, this is a really good idea, I really like it!". The first impression was good, and the idea ended with quite a high rating in the second assignment (not first though). The idea was liked because of the animal shaped shadows, and because of the possibility to climb. When asking one participant what he would do with the shadows, he mentioned to just walk over it, or maybe play a game with it. The surprising character of the idea was what made the idea exiting.

- IDEA 4: Rain play

  This idea was liked as well in the first impression, and was found interesting. But in assignment 2, two of the participants liked this idea the least, although one of them said he would like to combine it with the pigeons, and the other said to like the idea that you first know nothing about the prints. Another participant rated the idea slightly below average, but gave the same reason as the first (would be fun to combine with the pigeon shapes). The last participant rated the idea above average, because it made playing in the rain more fun.

- IDEA 12: Streetlight shadow

  The participants were not very familiar with the hand shadow shapes but were enthusiastic about it anyway. One of the boys reacted "Cool! This one is cool!" but wrote down in assignment 2 that it was "not that special". The other boy disagreed: "Those animals are cool!". A girl thought is was exiting because you could play that you were not allowed to step on the shadows. And fun because it could frighten you. They also wanted to try making the shadow shapes themselves: "Let me try! Look, an elephant!", showing that the idea triggered their imagination.

- IDEA 13: Creative crossing

  The first impression of the zebra crossings with the sharks and crocodiles was that it would be fun to play that you could only step on the white stripes. Else, you had to start over, or you would lose a life. When another participant said to also like the piano and started singing "ping, ting, ping", the others joined. The idea was highly rated, but the participants agreed that the piano and crocodiles should make sounds. One also mentioned that the crocodiles and sharks should move or that the crocodile should for example open its mouth when somebody wants to pass. The 'jumping' from stripe to stripe was also mentioned as fun.

- IDEA 17: Play parks

  This idea involved climbing, making most participants enthusiastic. The idea was rated very high by three of the participants, because of varying reasons: "you get strong muscles", "it creates more space for playing" and "you can do more stuff". The fourth participant said she would not play with it, except when she was bored. She explained that it was too much for boys and it looked like art, so you could not climb on it. After explaining that it was meant for climbing she liked it a little bit more, but still ranked it last.

- IDEA 18: Hide, seek and more

  When showing this idea (and where it came from), all participants agreed there was a lack of hiding places in normal streets. One also said that it would be fun to scare people from behind the walls. The idea got a high rating from one of the participants, whom found the idea funny. The others rated it quite low, but said that the idea was nice because it was fun to hide behind the objects.

- IDEA 21: Pigeon play

  The last idea that was selected was 'pigeon play'. One of the participants first said that he found it pitiful to scare pigeons, but when he realised that they were not real he really liked the game. Another said "Maybe I will put this one on no. 1, it is so cool!". They also mentioned that you could play different games, like counting who would 'catch' most pigeons after 10 times or so. The idea was rated high by all participants, because they liked the birds, the jumping on the tiles, and because there is nothing else to do on the sidewalks.

Input from research

Even when explaining that an idea was based on input from children from another school, the participants were convinced that they also gave similar input. This made it hard to check if ideas were appreciated more if they had a clear connection with the input of the idea. Nevertheless, it was positive that the participants claimed to have a connection with all ideas, because they apparently felt like they really participated in the process. One of them stated that she really liked to do this, and explained it was very good because she normally would not get asked about what she wanted in her neighbourhood.

Fig.5.3. - *Ranking of ideas by one of the participants. Comment written above: "They are all fun."*

5.2.3. Evaluation results - adults

The same selection of ideas was presented to 4 adults, of which one was a mother of one of the participants (co-research) and three were women working in a youth health care clinic.

The mother of one of the participants was interviewed, the others filled in the same list of questions though a digital document.

Again, the results will be described for each idea individually. This is followed by the results of the 'ranking' part.

- IDEA 1: Animal behaviour
  The participants mentioned that the idea looks inviting and friendly, and they expected that it would work well for showing what could be done with regular objects in the street. One participant did doubt about if children would actively go outside to use this idea, but expected they would definitely use it when they were outside already. The safety of the idea (mainly with cycling) was also doubted by some, because if it was applied in busy streets the children would have less attention for the traffic. However, it could also keep them on the sidewalk, improving the safety. The last comment was that it should be well maintained, and maybe the prints could be changed once in a while to keep it fun.

- IDEA 2/19 (combined): Tile challenge
  This idea was found feasible and fun. The participants all thought that children would like it, and jump of them, step from stone to stone or play games with it. In terms of safety there were no real concerns, but the comment was made that the children should not trip over the stones (so make them high enough and think about the materials) and the tiles should be placed on the safe side of the sidewalk. Additionally, the idea should leave enough space for other people. In general, the appearance of the tiles was found cheerful and funny.
- IDEA 3: Shadow play
  The idea was found surprising, but some adults were a bit concerned about the possibilities for actual play with the shadows. They all liked the idea and thought children would like it too, but some doubted if the children would notice the shadows or would like it on the long term. Others however said that it would stir the fantasy of the children, and they maybe would play a game with the shadows or make up stories. One adult mentioned that the objects could be combined with the names of neighbourhoods, to make a connection with its environment. Another said that maybe it should be more clear that you can climb on the 'art', by providing rubber tiles or extra play attributes. A comment about the safety was that the holes in the figures should be big (or small) enough, so heads and fingers would not get stuck.
- IDEA 4: Rain play
  The opinions of the adults varied: one liked the idea because it could make people/children focus less on the annoying part of rain, while another said that parents could get irritated if their children wanted to play instead of hurry up in the rain. And where one adult said to be careful about contradicting traffic signs (e.g. with prints of arrows), another said it could improve the safety if children were playfully guided towards sidewalks. The appearance was liked, although some said it would probably not be very visible, and maybe children would like it only for a short period.
- IDEA 12: Streetlight shadow
  The opinions about this idea were two-sided: on the one hand the adults thought that some children would find it exiting and interesting, but others would find it scary. Especially if younger children walk the same routes. Of course, the shadows can also be shaped like less scary animals, and become funny. Another issue was that children often have to be inside before it is dark, and therefore will not see the shadows or can only look at it from a distance. During daytime, the idea could also have a function: like being a meeting point ("I see you at the streetlight with the bird"). The appearance was liked (as long as it was not too scary) and the idea was found feasible.
- IDEA 13: Creative crossing
  The adults all thought the children would like this idea very much, and play with it or that it would evoke 'magical thinking'. Nevertheless, the adults were not so sure if it was a good thing when children moved slower on a crossing. Maybe the idea could be placed on other locations, or in low-traffic zones. Additionally, the sharks were found a bit too scary: maybe a 'bridge' through the middle would make it better, or just stick to the crocodiles and piano (with sound).
- IDEA 17: Play parks
  Again, the opinions about the idea were varying: Some thought the idea would make the street look nicer, and children would find it and climb in it. Others thought that it would be a pity if 'art' was placed in between cars, and children would not notice it there. They all agreed that the play element itself was nice, but that the safety was something to think about. Placing a small fence around it would make sure that children would not run on the street, and prevent neighbours from parking their car or motorcycle on the spot. One adult mentioned that it maybe would be better to place the idea somewhere else.
- IDEA 18: Hide, seek and more
  The adults liked this idea because children always like to play hide and seek, and flower tubs would improve the appearance of the street for everyone. Maybe the tubs/walls should be bigger to make it possible to hide behind them though, and not be too obvious for hiding. Traffic should not be hindered by the walls. Connecting this idea with a school playground would also be an idea according to one of the adults, so it would become the playground of the neighbourhood.
- IDEA 21: Pigeon play
  The idea was liked very much; the adults all thought that children would go outside to play with this. Most also mentioned that it was good that it evoked a physical exercise. Maybe different images could be used, to create an extra game element. Things to consider: the idea should be well maintained, and placed on a spot where it is not disturbing/unsafe to jump around.

When asking which ideas were liked most and which were liked least, idea 2 (Tile challenge) and 21 (Pigeon play) were often liked the most. Idea 1, 3, 13 and 18 were also mentioned. Physical activity was mentioned as an important factor, and appearance was also quite important. Idea 1 and 2 were liked because it made 'getting somewhere' more fun.

Ideas that were mentioned to be liked least were idea 1, 3, 12 and 17. Reasons mostly had to do with safety, or with the idea that it would soon get boring. Idea 3 was mentioned once, because it did not evoke physical activity enough (but this could be improved).

5.2.4. Evaluation conclusions

Children and adults are in general very positive about the ideas, but it is clear that adults have more issues with for example safety factors. Where many of the children liked idea 17 'Play parks' a lot because it made more space for them and involved climbing, adults were critical about the safety and placement of the idea. The children were much more enthusiastic than the adults about idea 13 'Creative Crossing' too.

But also when looking only at the comments of the children (or only at those of the adults), the opinions differed a lot. This makes it difficult to clearly conclude with a list of 'best' and 'worst' ideas. The only idea that stands out would be idea 21 'pigeon play', because it was mentioned as one of the best by both adults and children, without very big concerns about for example safety.

Many of the ideas can be improved on several aspects, but there is no need for dismissing any of the ideas straight away. The main issues to improve are:

- The 'durability' of the enjoyment of an idea: will it be fun for only a couple of times, or can it be fun for a long period? It is likely that children grow out of a certain playing preference at some point, but variation or a certain stimuli for using one's fantasy will postpone this;
- The safety of the idea, since (1) children should not be exposed to too dangerous situations (2) parents should allow their children to play with the idea;
- The required maintenance of the ideas: not much attention was paid to this yet, but ideas should

have a reasonable lifetime and require as little maintenance as possible.

- Appearance: although the children of this age group liked most of the 'scary' ideas, there are also younger children to think about. Some ideas can be improved on this point, by making them less scary but still exiting enough for the target group.
- Variations: Many variations came up during the evaluation. Additions in shape, function, sound etc. were mentioned by both children as parents. These can be taken into consideration when detailing/improving designs.

The improvements will not be carried out during this project (except to some extent for the two examples that will be presented in slightly more detail next). It is recommended that, if the play route ideas are taken to a next level, an evaluation with all the ideas is done first. Then, a selection of ideas can be improved and tested, for example with a prototype. Finally, the ideas can be worked out further and be realized.

5.3. Two Examples in More Detail

As said, appendix R shows the ideas in more detail than in the overview that was presented earlier, but the ideas are still in the first step of the development. On the next pages, two ideas (idea no. 3 and 4) are presented a little bit more elaborate, based on for instance the evaluation outcomes. Besides showing the main idea, some variations are given and an example of its proposed use. The ideas are still not elaborate enough to be design concepts, since for instance materialization, manufacturing and details in size and price have not been considered yet. The first idea (nr. 4) is an idea in the category 'print', the other (no. 03) falls in the category 'object'.

(Example) IDEA 4: Rain Prints

Short explanation (of the initial idea):

This design is only visible when it is raining, or when the street is still wet. If so, all kinds of trails and patterns pop up, or for example a hopscotch track. Because the patterns are not always there, the use is more exclusive and surprising, and therefore more appealing. The children can use their own imagination to create adventures or games.

Also, game extensions can appear: a few extra tiles on an existing hopscotch track, or game ideas for existing (play) elements.

To take into account:

- The prints have a life time of approximately 2 months.

Inspiration from research:

"The tiles shine pretty"

"I play tag around the hopscotch track"

"I think playing is exiting when every day is different"

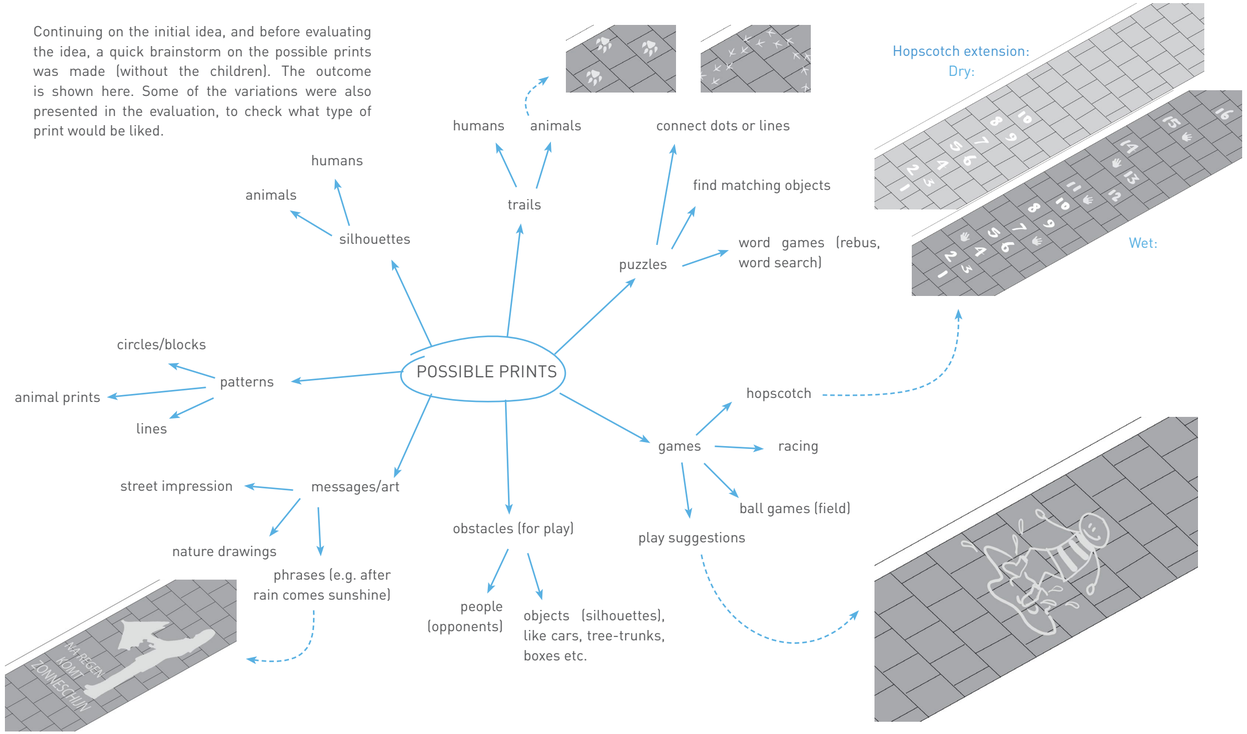
From inspiration sheet #07 and #08

This method is already used in the advertising business. So why not use it for play?

Different patterns or 'drawings' can be chosen.

This example comes from www.graffitinetwerk.nl

Continuing on the initial idea, and before evaluating the idea, a quick brainstorm on the possible prints was made (without the children). The outcome is shown here. Some of the variations were also presented in the evaluation, to check what type of print would be liked.



During the evaluation with the target group, this idea did not come out as one of the best, although it was liked in general. Especially the surprise effect, and the idea of making playing in the rain more fun was liked. Two children mentioned that it would be fun to combine it with idea 21, Pigeon Play. It was not entirely clear what they meant with this, but it could mean that including a game element would be better than just a decorative print.

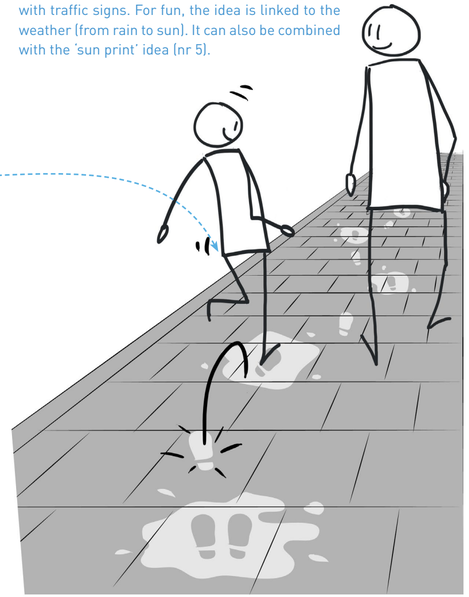
The opinions of the adults varied: one liked the idea because it could make people/children focus less on the annoying part of rain, while another said that parents could get irritated if their children wanted to play instead of hurry up in the rain. And where one adult said to be careful about contradicting traffic signs (e.g. with prints of arrows), another said it could improve the safety if children were playfully guided towards sidewalks. Additionally, the pigeon game was liked by the parents too, because it evoked physical activity.

Summarized, improvements can be made by taking the following measures:

- The print should have a game element in it;
- The print should not be contradictory with other traffic signs;
- Both children and parents like physical activity (although with different reasons) so this can be included in the game.

If parents indeed tend to get very frustrated by the fact that their children slow them down while playing in the rain, and therefore do not allow it, the 'Sun print' (idea 5) still is an option.

The image shows an example of a more game-like print (kind of like hopscotch, but then with more freedom of play), that does not have anything to do with traffic signs. For fun, the idea is linked to the weather (from rain to sun). It can also be combined with the 'sun print' idea (nr 5).



Of course, many more prints that meet with all the improvements can be thought of.

(Example) IDEA 3: Shadow Play

Short explanation (of the initial idea):

This idea is based on the idea that the street should not always be the same, in order to create a certain fascination. The shadows of these objects only are animals a few moments a day, while the objects (numbers and letters) are always there to play with. The shadows should stimulate a fascination, and with that some kind of action.

To take into account:

- Since the animal-figures only show when the sun is shining, and it has to be shining from right direction, the placement of the objects should be taken into account. Not every street will have the optimal direction for this design.

Inspiration from research:

This idea was based on the theme 'fascination' of the inspiration cards (#03) and:

"I think playing is exiting when every day is different"

"Nature and animals are beautiful on a route."

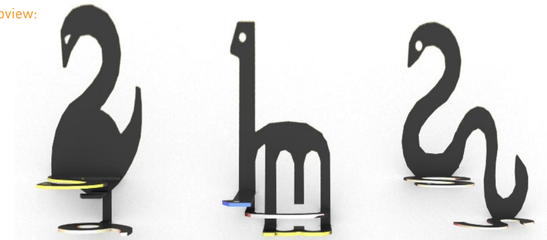
From inspiration sheet #03 and other quotes

On a random moment of the day, the objects are just objects...

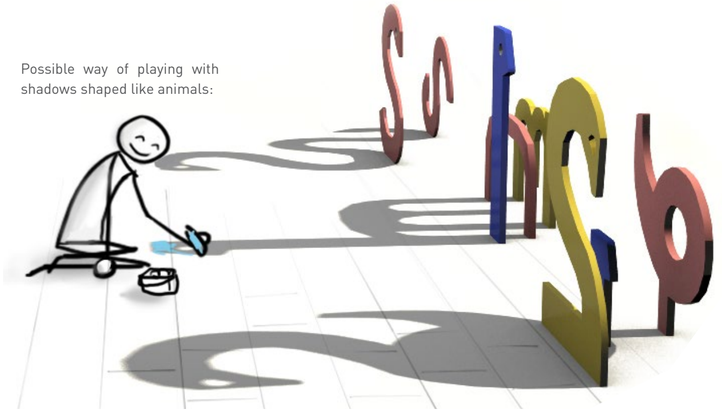
Example of use without shadows shaped like animals:

But with the sun from the right direction, strange shadows appear!

Topview:



Possible way of playing with shadows shaped like animals:



This idea was worked out with a 3D modelling program. By doing that, different setups of the shapes could be tested with a light setup, showing what the best configurations were for objects to make the shadow shapes appear.

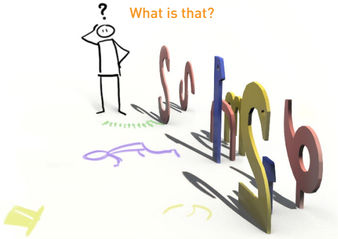
The evaluation with the children showed that the animal shaped shadows were found exiting and made the idea stand out. Nevertheless, the play ideas mainly had to do with the objects themselves because it could be used for climbing. A way of playing with the shadows was a little more difficult to think of, the children did not come up with more than "just play a game" or "you can play that you cannot stand on the shadows".

Adults found the idea surprising, but some adults were a bit concerned about the possibilities for actual play with the shadows. Some doubted if the children would notice the shadows or would like it on the long term. Others said that it would stir the fantasy of the children, and they maybe would play a game with the shadows or make up stories. One adult said that maybe it should be more clear that you can climb on the 'art', by providing rubber tiles or extra play attributes. A comment about the safety was that the holes in the figures should be big (or small) enough, so heads and fingers would not get stuck.

Summarized, improvements can be made for example by taking the following measures:

- Play opportunities with the shadows should be made more obvious;
- Rubber tiles can be added to make it look more like it is allowed to climb on (and parents like that for the safety of their children).

An example of putting more emphasis on the shadows, and possibly providing play ideas, is shown below.



6. INSPIRATIONAL TOOL | Designing a tool for Jantje Beton

The second part of the design phase is designing a tool for Jantje Beton. The purpose of this tool is to inspire municipalities to use child-participation when adjusting existing neighbourhoods or creating new ones. This means that the user is not Jantje Beton, but the officials that Jantje Beton wants to inspire.

This project is an example in which child-participation has been used to come to design solutions, and will therefore be the basis of the tool. The project will be explained step-by-step in the tool, to give an impression of how child-participation can be used. Eventually, the municipalities should be inspired by the used method and outcome, and express their enthusiasm in action.

Examples will be given in the tool on where to start (for example find a school that participates), but it will not be a ready-made plan of action. This would require a full explanation of for example how to conduct contextmapping, which (1) does not go together with the idea of a short and inspiring tool and (2) is too elaborate for this project.

6.1. Tool Setup

The tool will be divided in a number of basic steps (which will again be divided into sub-steps):

0. Introduction: Why use this tool?
   In the introduction of the tool, the user should be inspired immediately. This is done by giving some examples of the play route project already: it started with nothing and ended with ideas. Also, a short explanation of the problems with other approaches will be given, to emphasize the need for using child-participation.

1. Analysis Phase: Where to start?
   Depending on what is known already, some background information can be gathered.
   The play route project started with the entire Netherlands as scope and children age 6-12, which had to be narrowed down. The tool presents how this was done, and gives examples for municipalities that show where to start.
   For example: if the municipality is clear, one can search for problem areas within the municipality. Or if a neighbourhood is chosen already, one can for example analyse which schools/children could participate, or what age-range one wants to focus on. And what are the characteristics of the neighbourhood?

2. Research Phase: Child-participation?
   The research phase is the phase where the child-participation starts. It shows the different steps within the research, like finding participants, sensitizing the participants, executing generative sessions and co-research, and how to deal with all those results. The setup of the sensitizing booklets, sessions and co-research is shortly explained, to make clear that a certain level of expertise with contextmapping/co-research is necessary.
   After conducting the research, there will be a huge amount of information: transcripts, drawings, photos, videos and so on. How can these be brought back to conclusions? And how can the inspiring results be documented?

3. Design Phase: Designing solutions..
   After determining what input there is, and what input is seen as most inspiring, the designing can start. The tool mainly shows ideas from the play route project as inspirational examples of where one can get. Although the tool will not discuss design methods, attention will be paid to how the inspirations were translated into design ideas.

4. Evaluation Phase: Do children like the ideas?
   Before going to the realization phase, we first want to know if the target group actually likes the ideas, and which ones are most popular. Children can be asked for their approval, but should also get the chance to improve ideas. This way, they really participate in the process of improving their neighbourhood, probably resulting in a higher appreciation of the ideas that will be realized. Ideas will be dismissed, and new ideas might be generated.

The shape of the tool will be a fan with, on the front of each card an explanation (and some images and tips), and on the back the examples from the play route project. Some topics might need multiple cards, while others only need one. Separations between topics will be made clear by using numbers and colours. Fig. 6.1 shows an example of what the fan can look like.

6.2. Tool Development

A concept fan was made, which was arranged according to the setup that was described earlier. The tool was send back to the supervisors of this project for a first check, and was slightly adjusted afterwards. To make sure that people that do not know anything about this project or child participation also understand the tool, a short evaluation was set up. After this evaluation, the tool can be refined further.

6.2.1. Tool evaluation

Before handing over the tool to Jantje Beton, the concept first has to be evaluated and improved where necessary. This is done by checking with adults if the tool is understandable, inspiring, complete (should certain steps be added/described more elaborate to make the process flow more logical?) etc.

Evaluation setup

Two adults will be asked to read the fan from front to back (one very elaborately, and one a bit faster), and fill in a short questionnaire afterwards. The questions are categorized in four themes:

- General impression: With questions like 'To what extent were you inspired by the fan?', and 4 answering options and a sub question that asks why. The same question is asked for 'enthused' and 'informed'.
- Content-wise: With open questions asking for instance what the participant thought about the way the steps were explained, their opinion about the examples and if they felt that information was missing.
- Specific: With specific questions like 'Which cards do you find most inspiring and why?' and 'Do you have the feeling that you can continue with child participation after reading this fan? If yes, what would be the next step? If no, what is missing?' To evoke some critical comments on the fan, the participants are also asked to name the cards that they found least interesting, and to name some improvements that could make the fan more inspiring, more motivating and a general improvement.
- About you: With questions about the background of the participant, in order to know if they had any experience with children, child participation, or municipal decision-making.

Fig. 6.1. - *An example of the fan*

Evaluation results

The evaluation results will be discussed according to the earlier mentioned themes, but starts with the last theme ('about you') to give an impression of the participants first.

About you

The first participant was a woman between 50-60 years of age, has an academic degree and works as a director. She has children, but no experience with child participation or municipal decision-making.

The second participant was a man between 50-60 years of age, has an academic degree and works as a team leader. He has children, very little experience with child participation, and no experience with municipal decision-making.

General impression

Both participants found the fan very inspiring, although for different reasons: the first participant liked the appearance, readability of the text and was surprised by the fan. The second participant thought it was inspiring because of the insights in child participation and the way the reader is taken along in the difficult leap from 'data' to 'design'.

They also both experienced to be enthused by the fan, because of the same reasons (participant 1) and because of the great amount of examples (participant 2).

The last question in this themeasked to what extent the reader found the fan informative. Both participants were again very satisfied, due to the way of writing (from loose parts to one entirety, and clear descriptions), the described opportunities for implementation of child participation and way it tempts one to go and apply the described methods.

Content-wise

In this part, the participants were asked to imagine themselves into the role of municipality official and then answer a couple of questions. The first question was to answer to what extent the fan motivates to apply child participation. The first participant thought it was very motivating, because the described methods seemed quite simple and the arguments in favour of applying child participation were convincing. The second participant was a little more critical and answered that he probably would not have enough time as an official, and therefore had to hire someone/include schools to execute the child participation.

The way in which the different steps were explained was clear, and both participants felt addressed by the content.

The examples were considered as surprising and fun, although the front and back of the sheets were not always consistent. The amount of examples was fine.

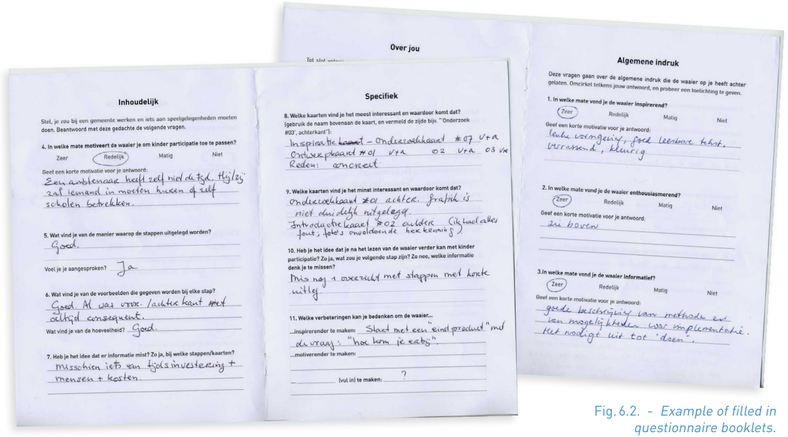


Fig. 6.2. - *Example of filled in questionnaire booklets.*

The last question of this theme asked if they felt that information was missing (and where/what). The participants did not have the idea that there was a gap in the information, although participant one suggested to include why child participation is worth the effort and why you want to get children to play. The second participant proposed that maybe something about time investment, people and costs could be included.

Specific

The first two questions were to name the most and least interesting cards of the fan. Participant 1 explained to like the frames with the summarized description of the steps, because they gave a good overview. Furthermore, she thought 'Design card #02 and #03' were interesting because they show the result and are inspiring. The participant had trouble with the contrast on the back of the orange and yellow cards, and therefore liked these least.

Participant 2 thought that 'Research card #07' and 'Design card #01 #02 and #03' were the most interesting, because of these were very concrete. Least interesting was 'Research card #01' because the contextmapping scheme was unclear, and 'Introduction card #02' (where the reader is asked if he/she can match images with steps of the process) was too difficult (unrecognizable).

The first participant had the idea that she could continue with further steps after reading the fan: she would try it on a school. An addition to the motivating character of the fan could be a financial argument (like 'it does not have to be expensive') and she advised to improve the colours/legibility of some of the cards.

The second participant missed an overview of all the steps, and proposed to start with the 'final product' and the question 'how did I get there' to make it even more inspiring.

Time

The questionnaire also asked to time how long the participants needed to read the fan carefully. This was 30 minutes for participant one and 55 for participant two. This was much longer than expected and it is likely that the people that Jantje Beton targets with this fan will not have that much time to read it. Nevertheless, the participants did indicate that it only took 1 or 2 minutes to get a general feeling of the content, and felt inspired quickly too. The fan can be shortened a little bit, but it also is important to keep the information complete enough for gaining good insight in the process.

Evaluation conclusions

The main impression of the fan was positive, and the fan was found both inspiring as informative. Nevertheless, some improvements came forward from the evaluation:

- Appearance: the colours should be adjusted in a way that the text is legible. White text on a light coloured background is not pleasant to read.
- Information: include a better description of the contextmapping scheme, an overview of the steps and if possible improve the consistency of front and back (although not every step has an interesting example to show). Information about the costs and time will not be included, since this was not researched or documented during the project. However, a general note (like one of the participants proposed) with 'it does not have to be expensive' and 'it is worth the time because ...' can be added.
- Inspiration: although the fan was satisfactory inspiring, it was proposed to change the 'picture guessing' card (back of Introduction card #02) into a 'design example' to excite the reader with the result of the steps before starting to explain them all. The other participant rather liked the guessing, so the exercise can just be made more easy.
- Outcome: the reader should be inspired and enthused, but not be triggered to immediately go to a school. He/she does not have enough experience/information to pull off an entire child participation project only by reading the fan. The fan could conclude with a suggestion of what the next step should be, or Jantje Beton should make this clear when handing over the fan.

6.2.2. Finalizing the tool

All conclusions from the evaluation have been implemented in the concept of the tool. The final version (for this project) of the tool can be found in Appendix T.

7. CONCLUSIONS | From start to end...

This graduation project started with the aim to design play route concepts for the public space, by first thoroughly researching what the target group wants and needs and including them in the process. The resulting product should set an example of the approach of generating solutions for play opportunities in the future.

The project can better be described as two projects in one:

- one in which an analysis, research and ideation phase for designing play routes was set up and carried out;
- and a second with the aim to design an inspiring tool that stimulates municipalities to use child participation.

Although the first faded into the second, the design and evaluation phase of both projects happened simultaneously.

The core of the project was the research with the target group, and the translation of the data from this research into design ideas. It was found that contextmapping and co-research combined make a very strong and useful method for child participation, resulting in ideas that surprise both children as adults in a positive way.

The contextmapping research appeared to be especially useful for gaining insight in the general perception of the target group, their way of playing and their wishes regarding (playing in) the public space. Co-research complemented contextmapping well, by providing insight in how the target group interacts/perceives their direct environment.

The 25 design ideas that followed from the research still need to be improved/detailed, but the translation of the data into inspiration sheets and thereupon into design ideas was executed quite extensively.

Instead of detailing one play route concept (or make an example route), the decision was made to focus on the 'second' project: an inspiration tool for Jantje Beton, which stimulates municipalities to use child participation. The fan that resulted from this gives a general impression of how to set up a project that makes use of child participation, enhanced by inspiring examples of the play route project. The evaluation of the fan showed that the information was clearly put and the fan inspired and enthused the readers with the presented examples and possibilities of child participation.

There are a couple of questions that remain unanswered. For example if the tool will not only inspire municipality officials, but also make them act. These open ends will be discussed shortly in the recommendations of this thesis.

8. RECOMMENDATIONS | To take into consideration...

Although the planned process has been completed and the project resulted in a tool for Jantje Beton, there still are some things to consider or left to be done. These are translated into recommendations and listed in this chapter.

8.1. Design Process and Further Steps

First, some recommendations on the design process itself will be presented. Although there are no real plans for the realization of the designed play route elements yet, there clearly is a need for this type of solution in the public space. These recommendations show what needs to be done to get there with the current state of the project.

8.1.1. Evaluation of the ideas

First of all, the evaluation (which was now done with 9 of the 25 ideas) needs to be done more thoroughly. All the ideas need to be evaluated (for instance per category), and by a larger number of children. It might be best to first choose an actual location and then evaluate with children that participated earlier in the research and some children that did not yet participate in the process but do live in the chosen area. This way, a selection of the target group participated in the full process, but the children that will be the actual users also have a chance to participate. The evaluation should make clear what ideas were good translations of the children's wishes and experiences, and which need further improvement. Improved ideas could be evaluated shorty again, to see if the improvements were effective.

8.1.2. Conceptualizing

After the evaluation, the best ideas can be worked out to more detailed ideas. Prototypes should be made if possible, to test if the children actually use/like the idea when it is implemented in the streets. Decisions about materials, size, production, placement and maintenance should be made.

8.1.3. Realization, and further steps

Finally, the products can be produced/placed, and the target group can use it for play. It would be very useful to evaluate the realized ideas after some time, to see if child participation works as expected: are the solutions better than solutions that were designed without child participation? Additionally, it would be interesting to research the long time results of child participation: will 'new' children, that were not included in the process, still like the ideas? Is it necessary to redo child participation for every project, or can results of one project be applied more broadly? These are only some examples of what can still be researched to make child participation stronger and more effective.

8.2. Tool and Further Steps

The next recommendations are about the designed inspiration tool and the next steps that Jantje Beton can focus on.

8.2.1. Evaluation

The tool itself was finished during this graduation project, although here too the evaluation could have been done more elaborately. The tool was found to be informative and inspiring by two adults that knew close to nothing about child participation up front, but the question remains if municipality officials are enthused enough to actually decide to work with child participation. This, of course, is also dependant on the rest of the setting: this project did not include ideas for Jantje Beton on how to approach municipalities or how to convince them to even take a look at the tool. Maybe an additional evaluation of the content of the tool is not necessary, but it would be wise to revise if the chosen type of tool/product is the best way of bringing across the intended message.

8.2.2. Enthused, and then?

The tool resulting from this project is meant to make municipalities enthusiastic about applying child participation, but more information and training should be provided before they can actually do something with it. It is recommended that the tool is completed with for instance a range of workshops, or a program for setting up and executing child participation. Perhaps a team of experts can be put together to guide municipalities in the process, or other graduation students can focus on how to simplify contextmapping and co-research without losing its effectiveness.

In conclusion, this project was one example of how to use child participation as a way to improve the public space for children. The project and the tool are a small part of a much bigger plan to change the way of thinking and working of the ones that decide upon the organization of the public space. It can contribute to reaching Jantje Beton's vision of the public space, and hopefully will inspire many people to letting children participate, or research this topic further.

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PERSONAL REFLECTION

The design ideas and inspiration tool have been evaluated by children and adults as part of the process of this project. However, it can be valuable to also evaluate the process itself, because this gives insight in what can be done differently next time (with a similar project or research setup). Since this is more about personal findings and things I noticed during the process, this part is presented separately as a 'personal reflection' on the process instead as a part of the project.

The focus of the project was mainly the child participation (contextmapping and co-research), hence the reflection on this part of the process will be more elaborate than the other steps of the process. Besides that, a reflection on the used research methods will be presented separately.

Process Evaluation

Before starting with the first phase, a clear structure of what needed to be done was made. This resulted in a step-by-step plan with a literature/analysis phase to get familiar with the topic and gather background information, a research phase to get insight in what the target group actually wants and desires, and a design phase to get to solutions. Later on, two more steps were added: the design of a tool for Jantje Beton, and an evaluation phase. All steps are briefly reflected on here, with some highlighted points per step.

Analysis phase

The background analysis mainly consisted of a literature research. Quite some literature was available about children and playing in the public space, although many articles were not very relevant for the particular topic of this project. As was expected, most available literature described research that was based on input from adults, or quantitative studies with children. This input was useful as background information and for specifying the problem definition further, but made clear that further research was indeed necessary to know more about the experiences and desires of the target group.

The location analysis was done after the pilot session of the research phase had taken place. This analysis was not included in the original setup but was necessary to define on which type of streets/ neighbourhoods to focus. The analysis had more to do with urban development than with industrial design engineering, hence it took a while to figure out where to start and how to approach this type of analysis. Consulting some students from the faculty of Architecture appeared very helpful for obtaining the right literature and get some affirmation about the path I had chosen. In the end I was able to analyse the location sufficiently to continue with the next step, but I would recommend to involve someone with knowledge of urban development earlier for a higher efficiency.

Research phase

The next step was the research phase. The process of this step will be evaluated here, but the evaluation of the research methods will be presented separately in "Research Method Reflection" on page 94.

This phase started with defining the research questions and setting up the contextmapping exercises. After analysing the methods and with some input from my supervisory team, this went quite smoothly. But because the research phase started at approximately the same time as the summer holidays of all primary schools, it was hard to find participants to join. A child care facility in Delft was willing to help with distributing the booklets among children and facilitated the pilot session.

Only one of the booklets that was handed out was returned. This was probably because the children were asked to send the booklets back by mail (the facility was closed for 2 weeks), and because the children that received booklets also went on holiday in that period. Although the envelope, address and stamp were provided, it is likely that people forgot to send it back or it simply was too much effort.

The pilot session was therefore done with children that did not do the sensitizing exercise up front, and one of the exercises of the sensitizing booklets was included as introduction. The output was very useful: it gave insights in the target group's wishes and experiences already, but also made clear what could be improved for the 'real' sessions.

After the summer holidays, schools were visited and called to ask for participants. Most schools did not want to participate due to various reasons (did not fit their schedule, new teachers had just started, it was too soon after the holidays), but the Delftse Montessorischool (DMS) and Jan Vermeerschool agreed to participate. Visiting the schools seemed to work better than calling, but also the fact that both schools were Montessori schools helped. These schools have a less tight schedule and appear to be more open minded towards this type of 'creative research'. Via the schools, there was more control on getting the booklets back, since the teachers reminded the children to bring them back in time. Also, it was easier to arrange the sessions, because the children were all in one group.

20 Booklets were returned and 5 sessions took place (including the pilot session). The participants for the co-research were also from these schools, although two couples were again from the child care facility. Here too it was found that there was more structure and control with the groups from the schools: one of the couples from the child care facility did not find time to participate in the end and with the other couple there was little time to reflect on the results. Next time, maybe the parents of the participants should be involved more closely (they were now contacted shortly by an employee of the facility) in order to know when the children would be back at the facility and when to schedule a reflection.

Design phase

The data gathered in the research was clustered, so general conclusions could be drawn. This took quite some time because of the large amount of data. Nevertheless, I had more trouble with what to do with the inspiring data. Since this could not easily be summarized into conclusions (this would again lead to general conclusions and not to specific inspiring examples), I first just left it like it was. Then, when generating ideas, I would take the whole pile of data and look for an inspiring example to base an idea on. Although it worked to some extent, I noticed to also work the other way around: I thought of an idea with the general conclusions, and searched for the specific examples afterwards. This led to ideas that were not very original nor surprising.

'Out of the box' ideas could be generated with the inspiration sheets on which some specific quotes and data were clustered without drawing conclusions. It is interesting to see how the results of this method differ from the results of the earlier ideations. The advice from the supervisory team also helped: do not try to immediately come up with ideas that are realistic, but go wild first! This was both fun as helpful.

Evaluation phase

The evaluation afterwards showed that the ideas are valid solutions for the wishes of children from the target group, and not only an interpretation of the designer. It was interesting to see that the children felt a connection with most of the input from the research (that was used as inspiration for the ideas), even when the input came from another group. The children seemed proud of the input they gave, although it was not clear if they rated an idea higher when they had provided the main inspiration for the idea.

During the evaluation session, the participants had to put the ideas in an order from best to worst. Most of the participants were very positive about most ideas, so the order that the ideas got in the end was quite meaningless (nr.7 was for example almost as fun as nr.1). Only one participant clearly pointed out some ideas that she liked less and why. The discussion during and after the ranking assignment did however tell a lot about what was good and bad about the ideas. Also, examples of possible use were given, and variations of the ideas were proposed.

Although the rating exercise gave rise to a good discussion about the ideas, more emphasis could have been given to the negative parts of the ideas.

Tool for Jantje Beton

The content and function of the tool were unclear to a rather late stadium of the process. I initially planned to work out some of the ideas, make an example route, and a tool for Jantje Beton with which they could put together routes for other areas. However,

it became clear that Jantje Beton was looking for a tool that inspires people to use child participation for improving the public space for children. Therefore, the planning changed slightly and the focus was not aimed on detailing ideas but on how to summarize the entire process to an inspiring story for mainly municipalities.

Looking back, I think this output is indeed more useful for the 'bigger picture' of improving the public space for children. Nevertheless, it is only a small piece of a solution, because what will happen after the municipalities are inspired and enthusiastic? The tool gives an idea on how to approach a project with child participation, but does not give enough information to actually do it. Workshops can be given about the research methods, designers and urban developers need to be included, and the embodiment of the ideas need to be worked out. These tasks remain to be executed by Jantje Beton (or e.g. students).

Research Method Reflection

The main methods for child-participation in this project were contextmapping and co-research. Since both methods are relatively new and still in development (co-research in particular), evaluating these methods in relation to this project can be very useful for future use. First, the contextmapping research will be evaluated, followed by co-research and the recommendations.

Contextmapping

The contextmapping was conducted in two parts: the sensitizing booklets and the generative sessions. Although both are familiar methods within contextmapping research and the general up- and downsides are known, there are some remarks that can be useful for future use.

Booklets

The booklets were a useful method for answering some factual questions, and made the children think about the topic of playing and routes quite well. Many of the children mentioned that they liked working with the booklets, one mother even wrote on the back that her child took the booklet to bed because she liked it so much. Nevertheless, a couple of improvements can be made:

- The assignments should be concrete: Some of the questions were left open by many of the participants, or filled in with the word 'nothing'. These were mostly the open questions that had to do with associations. Apparently, it is quite difficult to think for example of something 'crazy' or 'scary' on a route. Although most of the children could come up with something during the generative sessions after all, it might help to make the associations less abstract or give examples on how the participant can think of an answer (like: "search for something funny on your way to school").
- Creative exercises are preferred: The exercise that was liked most was the very first one, where the participants had to draw their main 'locations' on a map, including the approximate distance and method of travelling. This was a concrete question but a somewhat abstract and creative exercise. Maybe, some of the other exercises could have been more like this one.
- The timing and way of distribution is important for the efficiency of the method: As described earlier, the distribution and collection of the booklets worked better in schools with fixed groups and one (or two) teacher(s). I lost a lot of time with trying to find participants in other places. Therefore, it is advised that if your research happens to be in a holiday, it is more efficient to do something else first (like analysing existing projects) than trying to find participants somewhere else.

Generative sessions

The generative sessions gave very rich insights in the wishes and experiences of the target group. On the one hand the completed assignments already give insight in the experiences and associations of the target group, but the discussion during the sessions were the most fruitful. These discussions obviously could not have taken place when the research was a quantitative research like a questionnaire. During the pilot session and the other sessions, some valuable lessons were learned about using this method with children. These are shared below:

- Structure in the assignments is very important: It became clear during the pilot session that the assignments should be very structured. During the pilot session for example, the participants received a stack of photos and a stack of words and had to make 7-9 matches with these photos and words. There were too many words and photos, hence they got mixed up a lot and the words got lost in the paper chaos. In the next sessions, only nine words were provided on a preprinted sheet with boxes for gluing the photos on. Now, the participants simply had to find photos that matched (according to them) with the word in the box, and paste them on. Afterwards they wrote down in the same box why they had chosen this picture. This worked much more efficient, and the children seemed to enjoy the assignment more. Fig.I shows the difference between the output of the pilot session and the other sessions.
- Children attach great importance to the appearance of their work: The participants liked to make something beautiful out of the exercises. This is nice, because they are very dedicated to their assignment, but also makes them less free in their expressions. For example, some participants said "I don't want to write, because I only write very ugly". This is not important for the researcher (as long as you know what has been written), but holds the participants back from expressing themselves. Providing materials that already structure input in a nice way makes the participants focus less on the appearance of their work and more on the content. This was noticed after changing the photo-word-matching assignment, although the participant that made the right part of Fig.I. still insisted on writing her comments in blue and dark blue by turns. It can also help to make the provided materials a bit sloppy already. In the assignment where the participants had to draw on the printed street, the preprinted drawing was not very neat either.
- This made the participants less scared of making 'sloppy' drawings themselves.
- The breaks also give insights in the target groups behaviour: Since it was quite difficult for the participants to stay focussed longer than approximately 20 minutes, some breaks were necessary. It was interesting to see that the conversations and break-activities could be a good bridge to interesting information. During the pilot session, the participants for instance played with pillows on some kind of net. They

Fig.I. - *Difference between the photo-word-matching assignment in the pilot session (left) and the sessions after.*

explained later that they liked the creaking sound of the net. This probably would not have come up in the session, and gave a good idea about the kind of details that make certain ways of playing fun.

- Children jump from one idea to another: It was noticed during the sessions that children very quickly switch from one topic/idea to the next. This makes it more difficult to ask through on one specific comment and therefore harder to get to 'deeper' experiences of the target group. Although the mental leaps are interesting too (it gives good insight in how children think and react) the researcher should pay attention to asking through and staying on topic. It might help to have two researchers to keep the conversations on topic.
- Doing assignments individually gives other information than collective exercises. If it is important that the assignments are done individually, the children should be set apart. When they sit next to each other, a lot of talking will take place and sometimes the participants copy each others work. Positive about this is that they built upon each other's ideas and tell a lot about the things they are doing, but there is a risk that they do not communicate their own preferences, or loose focus.

  The photo-word-matching exercise was done individually (although they sometimes worked together), resulting in specific examples of associations of each participant. The street drawing exercise was done collectively, because it appeared that more ideas were generated while brainstorming then while working individually. It is advised to let the participants work individually when the desired output has to do with past/current experiences, but collective work is richer when thinking about future scenarios or generating ideas.

These are just a number of insights of conducting contextmapping with children. The guidelines that were gathered during the analysis of the methods (prior to setting up the research, see Appendix H) appeared to be very useful. These were for instance that a session should build up in level of knowledge (start with past/current experiences and ask about wishes for the future in the end), or about ways of formulating questions with children.

In general, it was found that every generative session is different, and that improvisation plays a big part in the success/richness of a session. Nevertheless, preparation and experience (or background knowledge) is definitely required for obtaining useful results.

Co-research

Co-research is quite a new method, and although the general structure was analysed up front, there was little information on what kind of setups often result in useful data. Therefore, three different setups were made in which the assignments were the same, but the documentation method was variable. All groups were asked to choose a route they often walk/cycle, and answer questions/execute assignments on their way. One group used a video camera to document this, two groups used a sound recorder and two used a photo camera.

In general, the co-research gave a good idea of the things that children encounter while walking/cycling a route, and the way they perceive their environment. It was interesting to see that different groups stressed other topics during their 'research'; where one group focused on the traffic and roads, another mainly talked about the play opportunities. This was an unexpected outcome of the research. For this research, this was quite useful because of the broad range of information that it resulted in. Nevertheless, if you want to compare the experiences in different areas, or of different genders for example, the assignments/introduction should probably be more explicit.

The differences that were found for the different documentation methods are described next:

- The video recording gave the best insights in the experiences of the children, because the images and sound complement each other well, and it appeals to one's imagination the most.
- The audio recordings were interesting, because one of the two couples described their route very elaborately and clear, while the other was quite curt. The information is very useful, but is not as lively as video recordings. Since I was familiar with the routes that the participants had chosen and they had drawn their route on the assignment sheets, I could check out the routes myself. This made it easier to get a grasp of the experiences.
- The (analogue) photos also gave interesting insights, since the participants had to be very selective in their documentation. Because they could only make a certain amount of photos, it is more likely that the most striking things are documented. A feedback session is definitely necessary with this type of documentation, because it is not always clear which photo belongs to which association/assignment or why.

When researching different routes, I would recommend to use video cameras for documentation. This gives the richest and most clear information. However, I think it would be very interesting to use the different methods when researching one specific route/area. This way, you get a variety of data (from general to specific) that can trigger different lines of thought. And since the route is the same, it does not matter that one medium does not cover everything there is to show.

The assignments that were used during the co-research were straight to the point and concrete. Most answers on questions were filled in after the route was completed, probably because it was difficult to write on the cart board while standing. Also, the video group for instance did not take the assignments with them on their route. Therefore, some questions were left unanswered in the video recordings (but were answered on paper).

Concluding

Contextmapping and co-research combined worked well for mapping the experiences and wishes of the target group. The contextmapping research appeared to be especially useful for gaining insight in the general perception of the target group, their way of playing and their wishes regarding (playing in) the public space. Co-research complemented contextmapping well, by providing insight in how the target group interacts/perceives their direct environment.

Although I had used contextmapping before, I was positively surprised by the outcome of the methods when conducting them with children. Besides having a lot of fun while discussing, drawing and writing with the children, it gave incredible input for the ideation phase. I would have liked to evaluate the ideas more thoroughly (with more children) and improve the ideas further, but I think the current project already showed what the value of child participation is.

Hopefully, Jantje Beton can use the project and tool to convince municipalities to spend more time on improving the public space together with children.