"De Klimkramen"

A co-creative journey to stimulate physical activity of children at the Dapperplein

Master thesis, April 2022
Luna Hollander

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PREFACE

This project would not have been as much of a success without some people's involvement. I would therefore like to take a moment to thank them.

First I would like to thank Jos Kraal en Mathieu Gielen, for your constructive feedback, suggestions and ongoing support as my chair and mentor of my supervisory team.

Mai Chin A Paw, thank you for the trust you put in me by letting me execute this project. I appreciate your lively enthusiasm for the topic, and learnt a lot from working with you.

Big thanks to the children from the Dapperschool. I enjoyed your energy and the many ideas that we came up with together during the workshops. You managed to surprise me again and again. I'm looking forward to your enthusiasm in case our design of "De Klimkramen" gets implemented.

Thanks to my facilitation buddies, Ariëla, Hendrik, Kati, Layla, Mai and Kunshan. You each added your own qualities to the workshops. I learnt a lot from working with you.

Thanks for sharing your knowledge and expertise during interviews to Helga, Ivet, Aimy, Martien, Jeroen, Xavier en Carlos.

Kantoor, thank you for the fun times at our office together. I enjoyed it a lot.

To David, Layla, Mariska, Martijn, Martine, Xiao and Eva, thank you for sharp comments while proofreading my thesis.

To all my friends and family, thank you for your warmth and support.

Enjoy reading!

Luna Hollander

ABSTRACT

Since 1975, obesity has nearly tripled globally, indicating a clear trend that threatens public health. Besides changing one's diet, the illness can be prevented by performing sufficient physical activity. In the Netherlands however, currently only 20% of the children of 11 years old meet the World Health Organisation guidelines for physical activity (Volksgezondheidenzorg.info, 2020). This is worrisome, since habits of sedentary behaviour often stick with a person from youth to adulthood (Hirvensalo & Lintunen, 2018). (World Health Organisation, 2021)

The section Child and Adolescent Public Health Research & Innovation (CAPHRI) of the Amsterdam University Medical Centre commissioned this project to address the lack of physical activity of children in Amsterdam. This project specifically targets the Dapperplein, as the section identified an interesting opportunity space here: During the day it is occupied by its daily market, but in the evening, when the market is cleared, an open space is revealed. This project aims to find ways to use that open space, and design something that stimulates children's physical activity at the Dapperplein, after market hours.

In order to do so, children living near the Dapperplein were engaged in co-creation. Co-creation with children has the potential to create a design that fits the users' (children's) needs, because it creates understanding of their context for the designer (me), via close involvement and collaboration of the user and designer in the design process. The children act as co-designers. During workshops with these children, as well as expert interviews, observations and a literature study the context of the Dapperplein was explored

and problems were revealed. As the project discovered, the children (and their parents) do not consider the Dapperplein to be safe during the evening. This is due to people hanging out and drinking at the square, as well as traffic that crosses at speed. Additionally, a lack of hygiene because of market leftovers is identified. Lastly, there are few stimuli present for children to play.

To address these problems, the design of "De Klimkramen'' was created. It proposes to place playing equipment at the Dapperplein that during the day, with addition of an awning and board, functions as market stalls. This creates a safe playing area, as it forms a physical barrier for traffic, and since it is inviting towards residents, more people will be there to keep an eye out. A sense of community is fostered as it is used in harmony with the market and forms an iconic view for the Dapperplein.

During an evaluation, the design was well received by representatives of the market, police and fire brigade, although adjustments are needed to ensure a better fit with the needs of the market vendors, and to avoid creating a new spot for people to hang out and consume alcohol.

Besides contributing to the section CAPHRI and to involved stakeholders with the design of "De Klimkramen", this project contributes to the design field with a reflection on the application of co-creation with children, and practical tips for those who (will) apply the method.

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This project aims to design an intervention in the public environment of the Dapperplein to stimulate physical activity of youth.
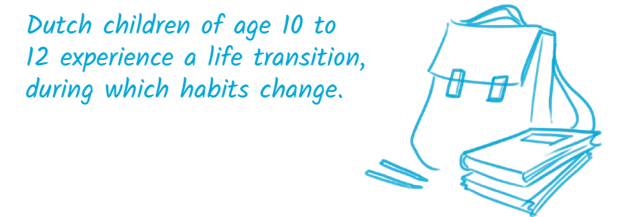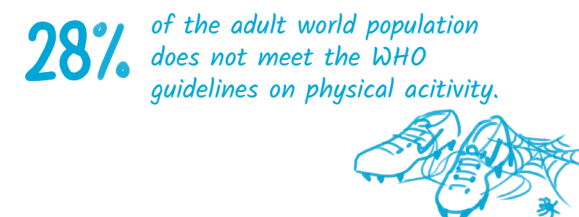
Since 1975, obesity has nearly tripled globally, indicating a clear trend that threatens public health. In 2016, over 1.9 billion adults (18 years and older) were overweight. Of these over 650 million were obese, accounting for 13% of the adult world population. The impact of obesity on an individual appears in an increased risk of cardiovascular diseases (primarily heart disease and stroke) and some cancers, as well as experiencing difficulties like breathing disorders, sleep apnea and pain in the lower back and knees on a daily basis (Xu & Xue, 2015). (World Health Organisation, 2021)

Even though overweight and obesity are largely preventable by following a nutritious diet and performing regular physical activity (150 minutes of moderate-intensity, or 75 minutes of high-intensity a week), the latter is not achieved by 28% of the world population of 18 years and older. (World Health Organisation, 2020)

Of Dutch children of 11 years old, currently, only 20% meets the World Health Organisation guidelines for physical activity by participating in more than an hour of physical activity a day (Volksgezondheidenzorg.info, 2020).

Encouraging physical activity is especially key in children, since habits of sedentary behaviour tend to stick with a person from youth to adulthood, as Hirvensalo & Lintunen (2018) describe. Their study on the physical activity of 115 981 children of school age from 22 European countries shows a decline of children meeting the primary UK health education authority guideline from the age 11 to 13, and 13 to 15, throughout Europe. The decline might be caused by increased social awareness and/or insecurity towards one's body as its physical shape alters during puberty (Alberga et al, 2012). However, above all, changes in habits of physical activity are visible during periods of transitions and life changes, as they change family composition or employment (Hirvensalo & Lintunen, 2018). Dutch children at the age of 10 to 12, collectively experience a life change as such as they transition from primary school to high school. Encouraging creation of healthy behaviour at this age is therefore promising.

A group that addresses the lack of physical activity of Dutch children is the section Child and Adolescent Public Health Research & Innovation of the University medical centre Amsterdam UMC. Together with the Municipality of Amsterdam researchers of this section seek solutions to implement in the public environment of the city of Amsterdam. One of their collaborative research projects is LIKE. This project examines the needs

13% Of the adult world population is obese.

20% of Dutch 11 year olds meet WHO guidelines for physical acitivty

28% of the adult world population does not meet the WHO guidelines on physical acitivity.

Dutch children of age 10 to 12 experience a life transition, during which habits change.

Photo: EVG Kowalievska

Chapter 1
INTRODUCTION
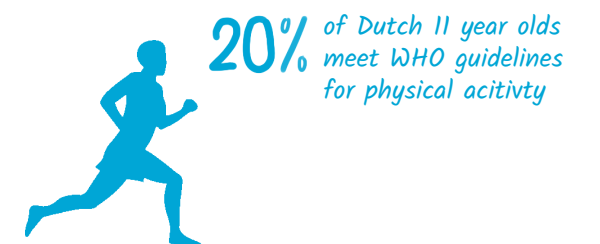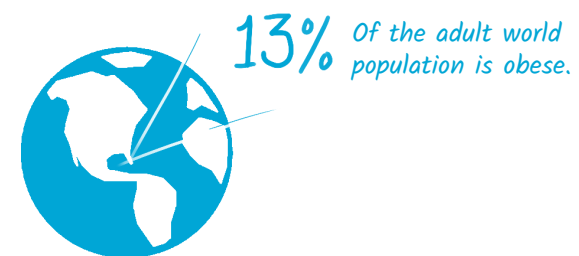
Figure 1: Classical roles of users (U), researchers (R), and designers (D) in the design process (on the left) and how they are merging in the co-creation process (on the right), inspired by (Stappers et Sanders, 2008).
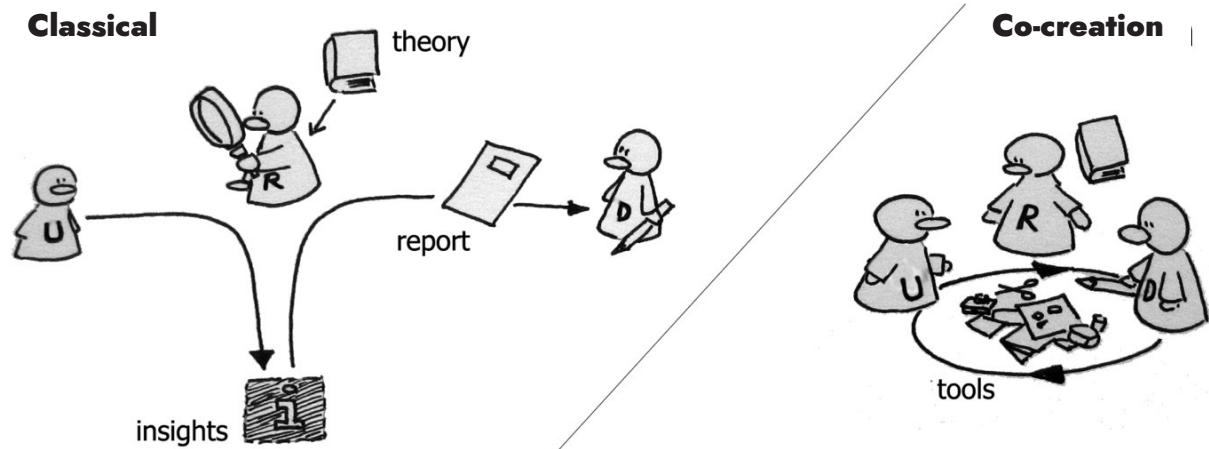
and wishes of children, and indicates opportunities for solutions. To develop one of these opportunities for solutions towards a concrete concept, this graduation project was initiated.

Playing outside is an important source of physical activity for children (Bento & Dias, 2017). The LIKE project revealed how Children of primary school-age have a small action radius when it comes to playing outside compared to children of high school-age. Therefore, in order for these children to be able to play outside, within their limited action radius, they would need access to outdoor playing opportunities close to their homes. Children that participated in the LIKE project particularly indicated the Dapperplein to lack opportunities for children to play outside. This might be due to the use of the square by the Dapperplein's daily market. This market occupies a lot of space at the square by day. After market hours however, the Dapperplein is near empty. This graduation project was therefore initiated to complement the LIKE project by exploring the

opportunities of designing an intervention at the Dapperplein to encourage children to perform physical activity after market hours. (LIKE, 2021) (Emke et al, 2022, Article in preparation)

This graduation project applies the method of co-creation with children. Co-creation can be described as the act of collaboratively defining and tackling challenges (Vandael et al, 2018). In contrast to a classical design process where the designer, user and researcher work separately, the three parties design collaboratively in a co-creation process, as described in figure 1. The co-creation process is valuable because multiple perspectives on a design challenge are joint, creating a more rich exploration and ideation. Co-creation is especially valuable when including the target group of the design, in this case children, as co-designers into the design process. Through this type of co-creation the designer is close to the target group, and thereby able to gain a better understanding of their context. Also, by acting as co-designers, the target group likely feels more

connected to the design, resulting in increased support for the design. Lastly, the design will likely be more fitting to the needs and wishes of the users, as they were involved in the design process. In summary, this project applies co-creation with children, which is described as the act of collaboratively defining and tackling challenges together with the children that are part of the target group of the designed intervention. (Sanders & Stappers, 2008) (Kambil et al, 1999)

The main research question of this project is thus: How can sustainably healthier behaviour be stimulated for youth living in Amsterdam, by designing (a) way(s) for the Dapperplein in Amsterdam to be more inviting towards the neighbourhood's youth to perform physical activity after closing hours of the Dappermarkt?

Through co-creation with children, a literature study, expert interviews, and personal observations this project will explore the context and problem (phase I), before ideating and selecting ideas for solutions to the problem (phase II), then entering conceptualisation (phase III), prototyping, testing and optimising (phase IV), before concluding with a final design. An overview of this process is provided in figure 2.

In addition, the project reflects on the process of co-creation with children, and formulates recommendations for those who wish to apply the method.
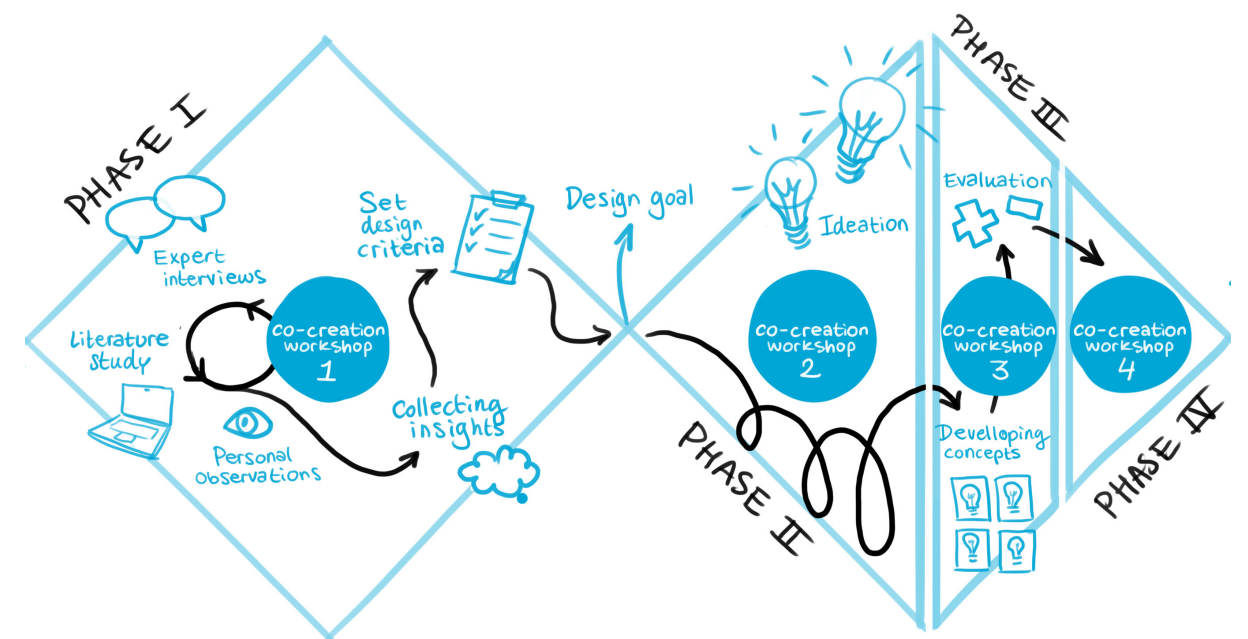
Figure 2: An overview of the four phases of the graduation project.

Photo: Martijn Verkuil

Chapter 2
SCOPE

The scope in which this project will answer the research question as introduced previously is youth of 10 to 12 years old at the Dapperplein after closing hours of its daily market. This scope includes a social (-demographic) context and physical context that both will be explained in this chapter.

2.1 De Dapperbuurt

The Dapperbuurt is a densely populated and culturally diverse neighbourhood of Amsterdam, with a little lower than average income and a lively market. Since 2013 the number of people living in the Dapperbuurt has increased by 22%. The density of inhabitants nowadays counts 16,917 people per km2, compared to 5,277 people per km2 for the whole of Amsterdam on average. On average residents of the Dapperbuurt earn less than the average resident of Amsterdam (€29,400 and €31.200 respectively). The Dapperbuurt is a diverse neighbourhood, with 19% of residents having a Moroccan background, 14% Surinamese and 11% of Turkish background. Figure 3 shows a map of the neighbourhood. (Informatie Wijk Dapperbuurt, n.d.)
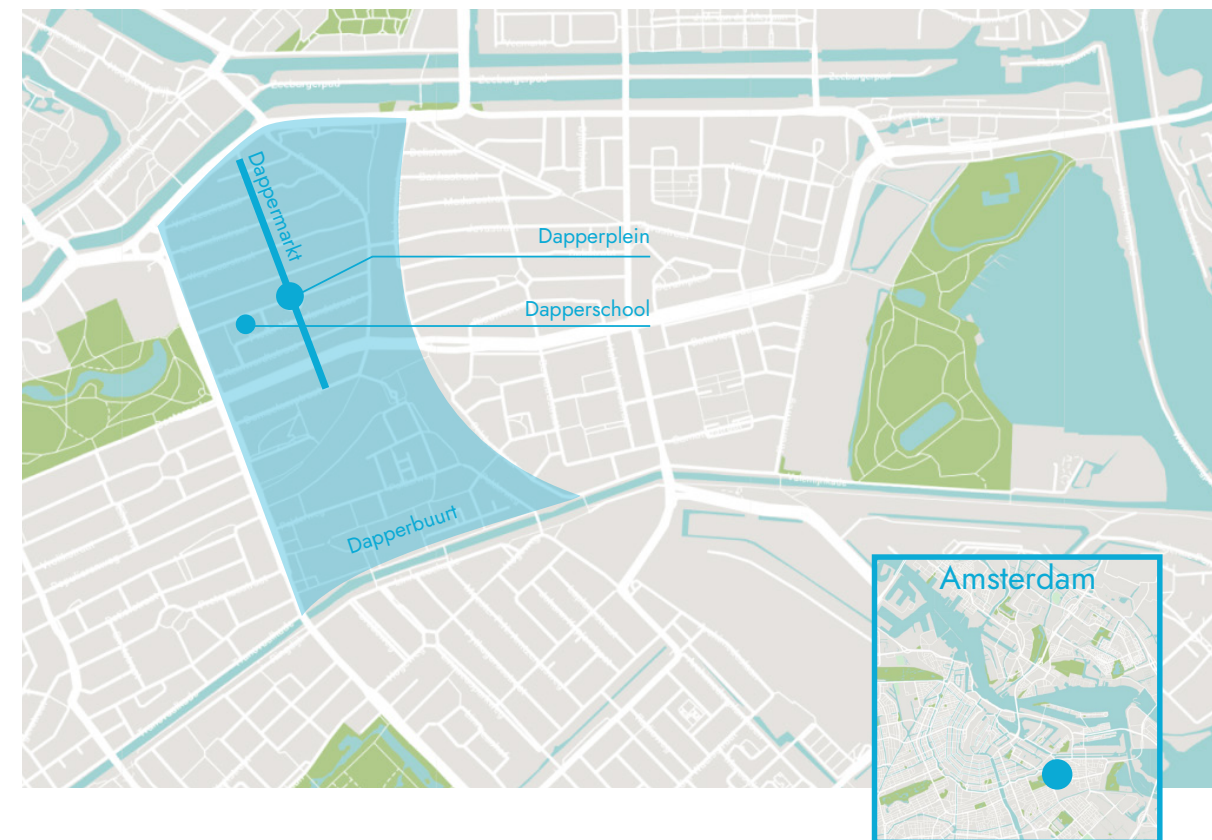
Figure 3: Map of the Dapperbuurt, with the Dappermarkt and the Dapperplein.

2.2 Dappermarkt

The Dapperbuurt is characterised by its daily market, the Dappermarkt, which follows a line that crosses the neighbourhood (figure 3). The market is open 6 days a week from 9:00 to 17:00, and counts around 200 market stalls. The market is as diverse as its hosting neighbourhood. Both food and non-food is offered, including stalls displaying flowers, clothing, textiles, fish, and spiced snacks. Figure 4 provides an impression. (Dappermarkt, n.d.) (De Dappermarkt, n.d.)

Figure 4: An impression of the Dappermarkt.

2.3 Dapperplein

At the centre of the Dapperbuurt lies the Dapperplein. As can be seen in figure 5, the Dapperplein is an oval shaped square, counting approximately 60 metres in its longest diameter. Most of that space is flat, grey concrete. Five grey, concrete basins are located at the corners of the square. They contain trees and their edges are used as benches.

The Dapperplein is surrounded by residential houses, restaurants and shops. A road for cars and bikes surrounds the square. As figure 5 shows, the Dapperplein is occupied by the Dappermarkt by day, and near empty by night.

the Dapperplein
after 18:30

Stationairy box

Restaurants & shops

During the market
Cars
Stalls

Stored market stalls

Tree basins
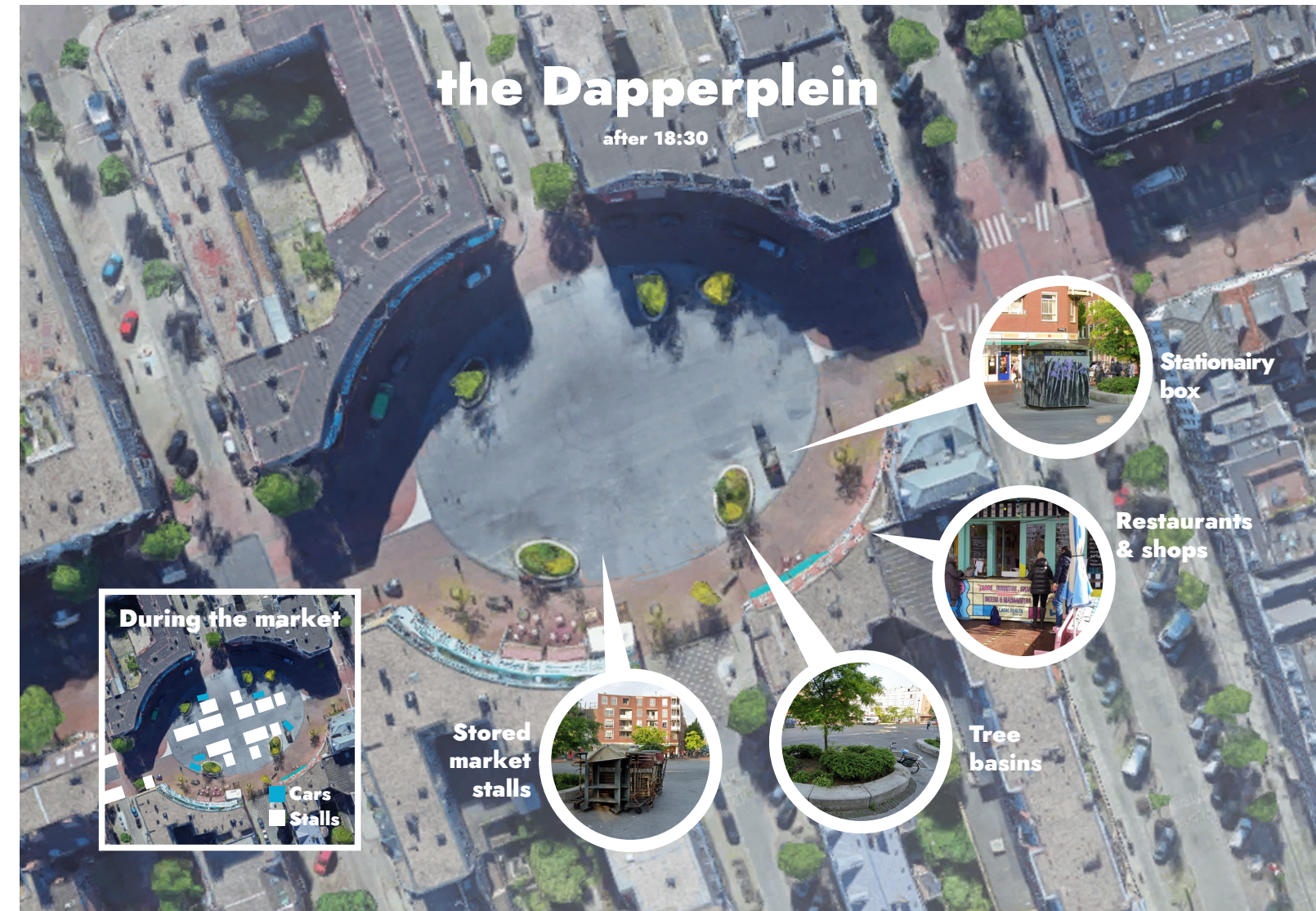
Figure 5: Properties of the Dapperplein.

2.4 Main actors at the Dapperplein and their interests

As mentioned, the Dapperplein lies in a densely populated neighbourhood, at the centre of a lively daily market. Therefore there are many people that use the Dapperplein on a daily basis, all with their own set of interests when it comes to the design of its public environment. Having them on board with a design intervention, will increase the likelihood of its successful implementation. It is therefore needed to gain an understanding in the variety of their perspectives. In figure 6, these people are grouped according to their occupations and interests. As mentioned, this project primarily explores the perspective of children.

Residents

Adults
Meeting neighbours at the Dapperplein. Commuting conveniently across the Dapperplein. In case the adult is a parent: Guarding the safety of their children.

Children
Playing outside at the Dapperplein. Commuting conveniently across the Dapperplein.

Surrounding shops

Shop owners
Selling goods at the shop.

Shop visitors
Buying goods at the shop.

Restaurants

Restaurant owners & employees
Attracting visitors to the Dapperplein. Having and/or gaining space for the restaurant's terrace.

Restaurant visitors
Having food and drinks in the restaurant

Delivery workers
Commuting across the Dapperplein as conveniently and quickly as possible.

Market

Market vendors
Selling goods to visitors of the Dappermarkt. Attracting visitors to the Dappermarkt. Building and deconstructing the market stalls in a convenient way.

Market visitors
Buying goods from market vendors.

Market stall builders
Constructing the market stalls in the morning and deconstructing them after market hours.

Cleaning team of the municipality
Cleaning the Dapperplein after the market.

Figure 6: The actors at the Dapperplein and their interest.
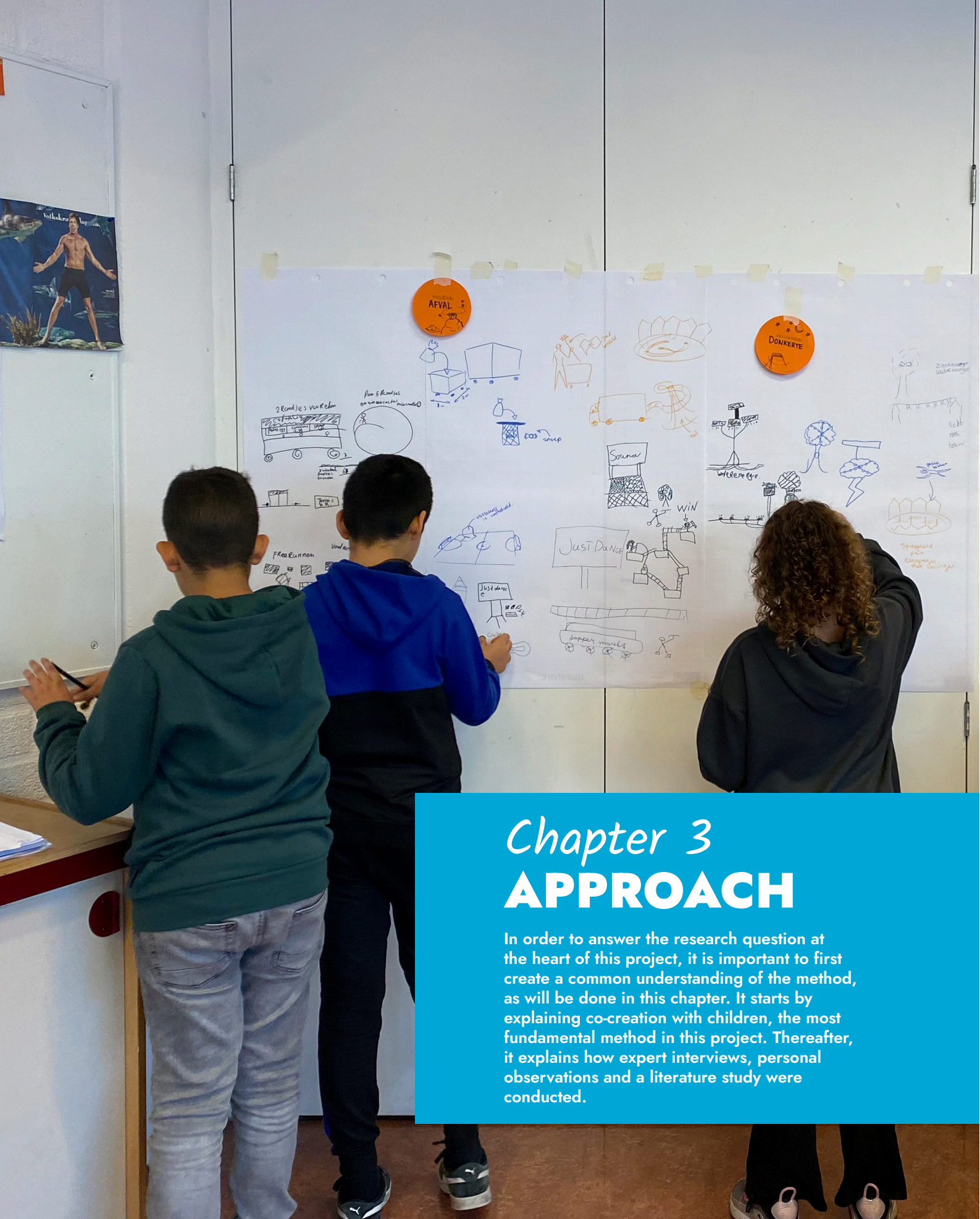
APPROACH

In order to answer the research question at the heart of this project, it is important to first create a common understanding of the method, as will be done in this chapter. It starts by explaining co-creation with children, the most fundamental method in this project. Thereafter, it explains how expert interviews, personal observations and a literature study were conducted.

3.1 Co-creation with children

This section goes over the most important aspects of the general method, co-creation with children, before discussing how it was applied in this project. Finally, it is noted how this project intended an interplay between the designer (me) and the children.

The method of co-creation with children

As stated in the introduction, this project describes co-creation with children as the act of collaboratively defining and tackling challenges together with the children that are part of the target group of the design intervention. Applying co-creation with children is valuable since by involving the target group of the intervention in the design process, the intervention will likely be more fitting to their context and needs.

The method of co-creation with children is especially suitable for this project, because it compliments the LIKE project of the Amsterdam UMC. The LIKE project researched the health behaviour of children in Amsterdam. As part of the project, they gathered insights on the lifestyle, needs and wishes of children when it comes to playing and performing physical activity at the Dapperplein. This project ties into that research and expands it by involving the children in a co-creation process.

The co-creation process follows the same design cycle as a regular design process does. The steps of the cycle are illustrated in figure 7. The design cycle starts with exploring a problem and formulating a problem statement. The following step entails ideation and selection of ideas. After this, concepts are developed and selected, whereafter a prototype is created. The prototype is tested and the concept is optimised, before sharing the concept by presenting. (Klapwijk & Holla, 2018)
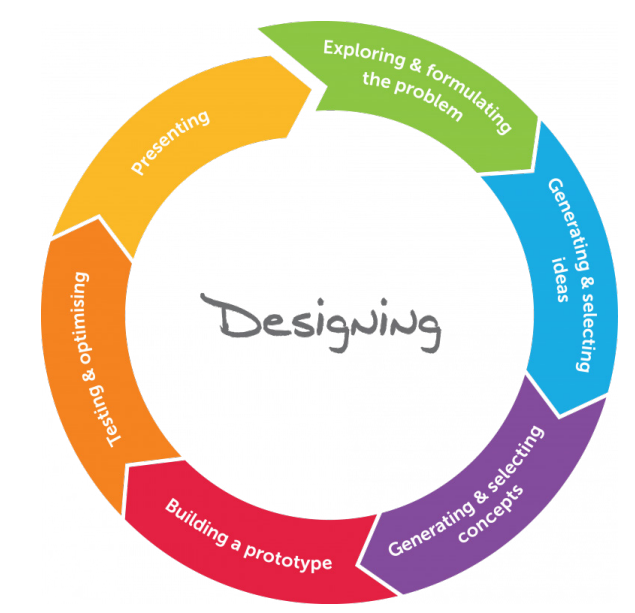
Figure 7: The design cycle that describes a sequence of design activities. (Klapwijk & Holla, 2018)

The value of co-creation with children to people who work on design interventions and to the participating children

Co-creation with children is of value for the people who work on design interventions and for the participating children. The value shows in the following ways:

- The children design solutions for their own neighbourhood. They contribute to long term positive change to their direct environment. When implementation of the solutions can be realised, the children enjoy their benefits.
- The children might become more aware of and more involved in their neighbourhood, consequently learning about their own potential of citizenship.
- Through sharing the outcomes and insights of the co-creation process with policy makers, designers and others who will be involved in the implementation of the design, they familiarise with the children's perspective and are more likely to create a fitting implementation.
- During the workshops the children learn design skills. The design skills can be applied in many cases of problem solving, which makes learning the skills useful for the children.
- Lastly, the co-creation sessions offer a fun time to the children as an alternative to their daily occupations at the school.

Figure 8: The class room where the co-creation workshops took place.

How co-creation with children is applied in this project

To get the method of co-creation with children in practice, workshops were organised with children of 10 to 12 years old at the Dapperschool, near to the Dapperplein. The aim of the workshops was to engage the children in a design process and together design solutions for the Dapperplein to become more suitable for children to perform physical activity.

Four workshops were held, divided over eight sessions. The workshops took place at the Dapperschool, a primary school near the Dapperplein. Fourteen children of the Dapperschool, aged 10 to 12, participated during the workshops. The parents of the children were provided with information about the project and asked for their consent. Furthermore, in this report the children's names are anonymised.

Each session took roughly two hours, during which approximately 7 children would participate, rotating for each workshop. Some of the sessions consisted of two rounds during which 3 to 4 children would participate in the first round, and another 3 to 4 children in the following round. Figure 8 shows the class room that was used for the co-creation workshops.

No teachers were present during the workshops. This was a conscious choice since the schoolish-vibe that would potentially be created during the workshop when a teacher would be present, could harm the co-creative process. This is because it could create a difference in power and/or authority between me as design and facilitator and the children as participants and co-designers. I aimed for a feeling of being equals between the children and me, to create a safe space for them to feel free to share ideas, including the silly ones.

Instead of a teacher, I was assisted by a facilitation buddy during each workshop.

The four workshops together covered all the steps of the design cycle, with the exception of the last step ("presenting"). This last step is completed by the designer, through presenting the resulting design to relevant stakeholders. Figure 9 shows the number of workshops, indicating the workshop's goal and what I did as preparation in between.

Workshop 1	Workshop 2	Workshop 3	Workshop 4
As part of phase 1 of the project "Exploring the context and problem"	As part of phase 2 of the project "Ideating and selecting"	As part of Phase 3 of the project "Conceptualisation"	As part of phase 4 of the project "Prototyping, testing and optimising"
The goal is to get to know one another, provide an introduction to designing and explore the context and problem.	The goal is to check whether the problem statement resonates with the children, and to generate ideas.	The goal is to introduce the developed concepts, evaluate each concept, and iterate on them.	The goal is to test and evaluate a (simple) prototype of the concept, and iterate on it.
Two sessions	Three sessions	Two sessions	One session

What I do in between	What I do in between	What I do in between
Summarising the problems that the children identified in a problem statement	Structuring the ideas, and creating concepts	Selecting a concept, and creating a (simple) prototype

Figure 9: The number of workshops, indicating the workshop's goal and what I do as preparation in between.

Interplay; the "Feedback loop" and "dynamic in ideation"

The co-creation process takes place during the co-creation workshops, where the children and designer (me) work on the design challenge together, but also outside of the workshops, where the designer interprets and does ideation solo. This section describes the interplay that is intended between the children and the designer, to lead to a fruitful co-creation process.

A "Feedback loop" is intended. The children share their knowledge during the workshops. Outside of the workshops, the designer interprets the knowledge. During the next workshop, the designer then validates with the children whether (s)he correctly understood the knowledge that they shared previously.

Also a "Dynamic in ideation" is intended. During the workshops the children and designer ideate. Outside of the workshop the designer iterates on the ideas that were collected during the workshop, to take them one step further. At the start of the next workshop (s)he reminds the children of the ideas that they had, and asks them for their opinion on the iterations. Ideally, this sparks new ideas with the children.

The cycle of the interplay is visualised in figure 10. The success of the interplay could show in the extend to which the participating children feel ownership over the final concept. Section 11.1 reflects on how the interplay worked in practice.
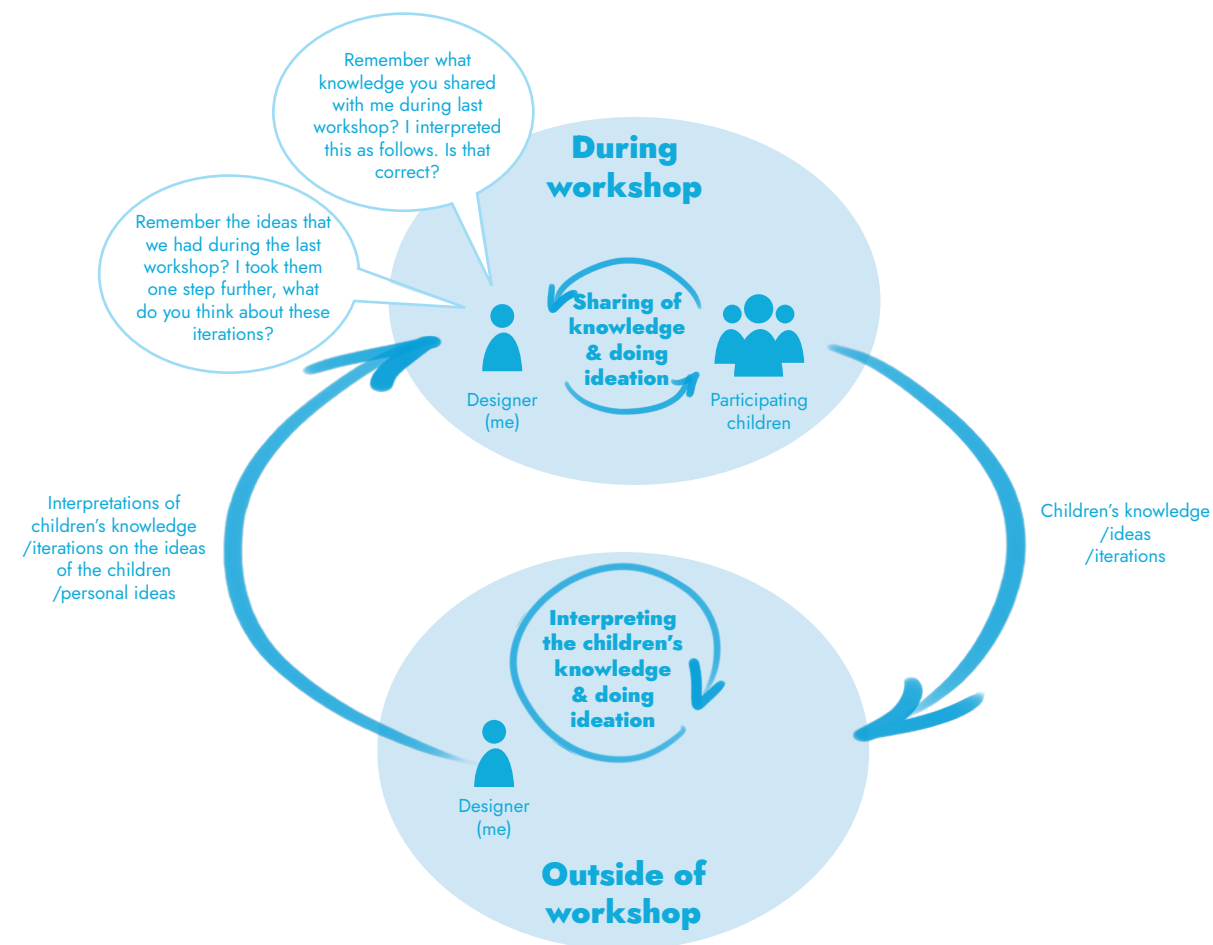

Figure 10: Explaination of the interplay.

3.2 Activities complementing the method of co-creation with children

Expert interviews
Complementing the knowledge and ideas that were gained through co-creation with children, semi-structured interviews were conducted with experts on the fields of co-creation with children, the context of the Dapperplein and stimulation of physical activity in children. The experts and their roles are shared below:

Experts on co-creation with children
- Helga Emke: Helga is a PhD candidate within the LIKE project, a previous project that applied participatory action research, to stimulate healthy behaviour of children (10 to 14 years old) in Amsterdam. She did this with youth of high school age. Her close colleague worked with children at the Dapperschool.
- Ivet Pieper: Ivet is the director of Stichting Alexander, an institution that applies participatory research with youth.
- Aimy Ogaeri: Aimy works at Stichting Alexander. Aimy did, until recently, workshops with children of the Dapperschool during which she and the participating children did co-research on the children's health behaviour.

Experts on the context of the Dapperplein
- Martien van Rijn: Works at the municipality of Amsterdam involved in co-creation activities at the Dapperplein with adult residents.
- Jeroen Aelen: Involved in co-creation activities at the Dapperplein as a resident.
- Xavier Goupillon: Xavier lives at the Dapperplein and contributed last year to a co-creation project with residents of the Dapperplein, and designed a future vision for the square.

Expert on stimulating physical activity
- Carlos Opoku: Works at the municipality of Amsterdam as program manager of sports facilities in the Dapperbuurt.

Personal observations
To complement the knowledge and ideas that are gained through co-creation with children, personal observations at the Dapperplein were done. I visited the Dapperplein, where I recorded my personal experience of the Dapperplein by making notes and taking pictures. I interviewed people on the streets in a semi-structured manner. Among the people who were interviewed were various residents, three market vendors and a person who is part of the municipality cleaning team.

Literature study
Lastly, a literature study complemented the knowledge and ideas that are gained through co-creation with children. As part of this, papers and articles were read.

Chapter 4
PHASE I: EXPLORING THE CONTEXT AND PROBLEM

After introducing the approach, it is time to dive into the content of the project. This chapter describes phase I of the project. During this phase the context is explored, based on six (research) questions that are listed at the right. For each (research) question it is explained how the question is answered. The first, third and fourth question rely on knowledge that was gained during workshop 1 with the children of the Dapperschool. This workshop is explained at the right. The chapter concludes with a problem statement and design goal.

● **What is it like to be a child of 10 to 12 years old in the Dapperbuurt? (section 4.1)**
Answered by behavioural observations during the co-creation workshops at the Dapperschool and analyses of audio recordings of these workshops.

● **What is my first impression of the Dapperplein? (section 4.2)**
Answered by personal observations at the Dapperplein.

● **How is the Dapperplein experienced by residents (both children and adults) during the evening? (section 4.3)**
Answered by insights gained during workshop 1, and by interviews with residents and Martien van Rijn (municipality employee who discusses the needs and wishes of residents for the public environment of the Dapperplein on a daily basis).

● **Where in the Dapperbuurt do children currently play, and what aspects of these locations make it suitable or not suitable for play? (section 4.4)**
Answered by insights gained during workshop 1.

● **What current initiatives are there to increase physical activity of youth at the Dapperplein and what are their challenges? (section 4.5)**
Answered by interviews with Carlos Opoku (program manager of sports facilities in the Dapperbuurt) and Martien van Rijn (involved in co-creation activities at the Dapperplein) who both work for the municipality.

Workshop 1

Workshop 1	Workshop 2	Workshop 3	Workshop 4
Goal Getting to know one another, providing an introduction to designing and exploring the context and problem	*Goal* Checking whether the problem statement resonates with the children, and generating ideas	*Goal* Introducing the concepts, evaluating each concept, and iterating on concepts	*Goal* Testing and evaluating a (simple) prototype of the concept, and iterating on it

2 sessions with a total of 13 participants.

Main activities during the workshop

Sharing personal experiences of the Dapperplein in the evening
A poster is displayed, showing the Dapperplein after 18:30 (when the market is cleared). The children are asked to write on green post-it's things that they enjoy about the Dapperplein at this time of day. On orange post-its they write what they do not enjoy. On blue post-its they write their observations or neutral experiences with the Dapperplein. On cloud shaped pieces of paper, they finish a sentence, such as "During the evening the Dapperplein is…". All post-its and cloud shaped paper are gathered on the poster.

Results shown in section 4.3.
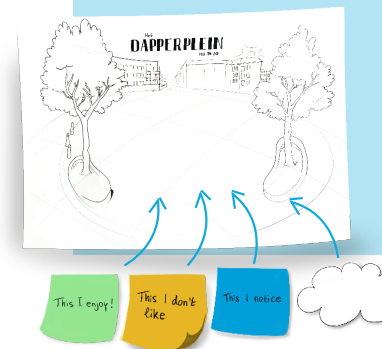
Sharing experiences with playgrounds in the Dapperbuurt
A map is displayed showing the playgrounds in the Dapperbuurt. Each playground is also depicted on printed photos. The children pick a photo of a playground that they are familiar with and about which they want to share their experience. The children then pick a template. On the template, the children share what they call the playground, with whom they visit the playground and how often. They then indicate what one can do at the playground and what they like and dislike about it.

Results shown in section 4.4.

An introduction to designing
Plenary we discuss what designing is, according to the children's experience with designing and according to an example of a design process. Then, a game is played to illustrate the use of rapid prototyping in a design process. A problem is introduced ("I like to draw, but I keep loosing my pen."). Also a set of requirements is presented (e.g. "the design needs to allow me to access the pen while I walk through the class room."). The children form teams. They are then given 10 minutes to come up with a solution and prototype it using aluminum foil and tape.

Result of this activity was a better understanding for the children of what designing means. Two of the rapid prototypes that the children made are shown below.

4.1 Being a child of 10 to 12 years old in the Dapperbuurt

Since children of the age 10 to 12 living in the Dapperbuurt form both the target group of this project's design, as well as the participants/co-designers of the co-creation process, it is crucial to understand their lifestyle. This was done by doing behavioural observations during the co-creation workshops at the Dapperschool (indicated with 👁) and analysing audio recordings of these workshops (indicated with 💬). This section discusses the resulting insights.

Dynamic transitioning phase
The children are in a dynamic transitioning phase in their lives. Almost 8 years they have spent together at the Dapperschool. They have grown familiar with one another, the neighbourhood and the school. But this year, they are preparing themselves for a change: they are going to high school. They will make new friends, often in a new neighbourhood, learn new subjects, and will need to adjust to the customs of a new school. Meanwhile puberty hits and the children explore a different side of themselves while their bodies are changing.

💬 While walking to the classroom, one of the children asks me whether it's normal to have her period every three weeks.

💬 Another child, when asking what you can do at a square in the Dapperbuurt replies "being in a relationship".

💬 Zara lets me know that she feels like she is being watched by family and people she knows from school. She can not wait to change schools and start a new chapter in her life.

👁 The children receive advice for their schooling level. They insist that my facilitation buddy and I share the advice we received as well, as the children compare and discuss theirs.

Increased responsibilities
The children have increased responsibilities. They are growing towards an age where people (parents, friends, teachers) ask more responsibility of them.

👁 One of the children had to leave earlier during a workshop since he had to pick up his little sister.

💬 The children prepare for the Cito-toets, the test that in the Netherlands determines what high school a child can attend. In preparation of the Cito-toets, the regular school tests get more serious for the children as well.
Jasmine: "We were supposed to have a topography test today. [...] I spent 5 days at home, without my phone. I was practising all the time. There are 52 countries."
Nahla: "53 to be precisely (...) Yesterday I went to bed at 22:15 because I was still practising for the test."

Exploring personality
The children explore their personality and the way they might (or might not) fit in a group. The children are constantly poking and challenging one another.
Some of the kids ask very personal questions, to explore what kind of answers different people give to these questions and how they feel about the topics themselves.

👁 The children are constantly calling eachother names based on their origin and/or clothing style ("Turk", "Gothic", "Unicorn lover").

👁 I had my Whatsapp open in sight of one of the girls, she asked why I had a message from "Nissim Gaypride" and if I was part of the LGBTQ-movement. She also shared how in her religion she and friends would not be allowed to experiment with the same sex. We discussed what she and her friends think of this.

👁 When designing a game, Jasmine draws suggestions for the activities that the children could in the break, clearly separating activities for the boys and activities for the girls, as shown in figure 12.

👁 Zara notices the nose piercing that my facilitation buddy is wearing. 10 minutes later Israe is wearing a similar nose piercing made of aluminium paper that she found in the classroom.

👁 When my facilitation buddy for the day comes from Taiwan, the children are interested and ask her a lot of questions about Taiwan and her experience of the Netherlands.

Conclusion
It can be concluded that a lot is going on for these children. They are on the edge of a new phase in their lives. Their parents, teachers, family and themselves increase their responsibilities. Meanwhile, they are figuring out their personality. These insights in their state of being will function as an inspiration for the design.
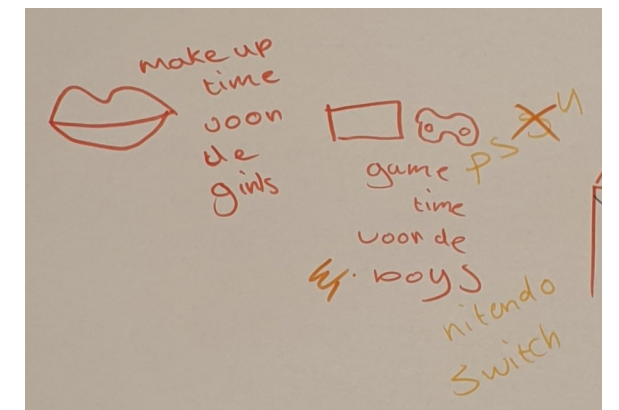
Figure 12: Jasmine drew ideas on activities for boys and activities for girls.

4.2 My first impression of the Dapperplein

Before getting to know the Dapperplein through the perspective of the children (through the co-creation workshops) and the residents (through interviews with municipality employees that engage with residents on a daily basis), it is relevant to start with a visit to the Dapperplein myself to gain a first impression from my own point of view.
I did so on the 28th of september 2021. I roamed through Dapperbuurt and especially the Dapperplein, from 4 pm to 7 pm. Notable is the transformation that occurs between 4:45pm and 6:15pm, where a lively market is cleared and leaves a blank and open space with only trash from the market and a smell of fish leaves a hint of what was a buzzing crowd.
This section describes the most notable observations during the visit to the Dapperplein:

● **Observation during the market**
The diversity of the neighbourhood shows in the market stalls. Products are sold such as colourfully patterned fabrics, Persian carpets, clothing, flowers, fish and cheese.

● **Observation during the market, during the transition and after the market is cleared**
There are numerous men hanging out at the Dapperplein and the streets surrounding the square. In my experience they have an odd look in their eyes. I noticed some that were hanging out in groups (e.g. playing music from the window of their car, or just sitting at a bench together), but most I viewed alone staring into space. When the market was cleared up and most people parted, the men stayed around. In my experience this gave me an uncomfortable and slightly unsafe feeling. I could see how children are not comfortable playing outside at the Dapperplein in an open space only in the company of these men.

Nevertheless, this could be an incidental affair. I will therefore verify with the children during the workshops and with the municipality employees in interviews (as both discussed in section 4.3) whether this is common.

● **Observation after the market is cleared**
Even after the market has been cleared up and the municipality cleaning team has passed, there is still trash lingering at the sides of the square. To my experience this creates a feeling of disgust, and a feeling that the neighbourhood is not taken care of. Again, this phenomenon could be incidental. I will therefore verify with the children during the workshops and with the municipality employees in interviews (as both discussed in section 4.3) whether this is common.

● **Observation after the market is cleared**
After the market has been cleared up, there is a large open space.

● **Observation after the market is cleared**
After the market has been cleared up, there is a lot of traffic crossing the square, which consists mostly of bikes and scooters. I could see how this is uncomfortable for children who would like to play at the square and/or a reason for parents not to let their children play here. Again, this could be incidental. I will therefore verify with the children during the workshops and with the municipality employees in interviews (as both discussed in section 4.3) whether this is common.

4.3 Experience of the Dapperplein by residents (both children and adults) during evening hours

To verify whether my experience of the Dapperplein consists of mere coincidences or if they reflect the general feeling and atmosphere of the Dapperplein, it is now examined how the Dapperplein is experienced by child residents, as well as the adult residents.

The children's perspective on the Dapperplein during evening hours
During workshop 1 The children gathered around a poster of the Dapperplein, shown in figure 13. On post-it's they wrote (1) what they see or do at the Dapperplein (2) What they like about the Dapperplein (3) What they dislike about the Dapperplein. Cloud shaped sheets of paper were handed to the children, where they completed the sentence on the cloud, such as "In the evening the Dapperplein is …". The children attached the post-it's and cloud shaped papers to the poster. While doing so, the children were invited to tell the stories behind what they wrote down.

Note how various children pointed out not to feel safe at the Dapperplein after closing hours of the market. This is a reason for them to avoid the Dapperplein in the evening. Most children also share how their parents forbid them to be at the Dapperplein by night.

"There is a man who gives me angry eyes. He is very scary." - Nasira, she then asked me to draw a man on the poster who is overweight and sits on the concrete tree basins.

Nahla finishes the sentence "During the evening the Dapperplein is…" with "Awful!!! Because there are: shootings, darkness, junkies, drinking beer."

Some of the children added drawings of beer cans and bloody knives to the poster.

Note how various children point out to enjoy the activities that are organised by Dynamo, a sports organisation. The activities take place from time to time on Sundays, and include e.g. tennis or shooting with bow and arrow. This shows how, if playing equipment is provided and the children are guided by sports instructors, some children enjoy joining for sports activities at the Dapperplein.

Omar wrote down what he likes about the Dapperplein: "The events: soccer, bow and arrow, tennis, dancing."

Note how various children point out how they think the Dapperplein is dirty because of the leftovers of the market. This makes it uncomfortable for them to be at the Dapperplein after market hours.

Nasira shares: "It is often dirty because of the leftovers of the fish stall and so on."

Figure 13: Experiences shared by the children about the Dapperplein during the evening.

What adult residents commonly bring up about the Dapperplein

The adult resident's experience of the Dapperplein is examined through interviews with municipality employee Martien van Rijn, and residents Jeroen Aelen and Xavier Goupillon.

Traffic crossing the Dapperplein

Even though the road surrounding the Dapperplein suggests going around the square, traffic, including cars, tend to cross the square, resulting at times in dangerous situations. During the day the market blocks traffic. However, as soon as closing hours come nearer and there's less people at the market, cars start using the square as a passway, as can be seen in figure 14. Furthermore, the Dapperplein is part of an illegal racing circuit. There are streets in the Dapperbuurt that connect in such a shape that drivers can accelerate and use it as a racing parkour. It happens that at night cars at great speed cross the Dapperplein. Consequently, residents are concerned about safety of themselves and their children.

Moreover, drivers are spotted at night, using the Dapperplein as an arena to practise drifting. (M. van Rijn, personal communication, September 29, 2021) (J. Aelen, personal communication, November 4, 2021) (X. Goupillon, personal communication, November 4, 2021)

Lack of hygiene at the Dapperplein

The Dapperplein lacks hygiene due to left-overs of the Dappermarkt. The municipality cleaning team cleans the square after the market by picking trash and using a street sweeper. However, still after this cleaning routine, trash lies around. Furthermore, the smell of fish remains present throughout the night. This is because the fish stall is considered to bring most visitors to the market. Its market vendors thereby were able to bargain a special arrangement with the municipality. This means that, unlike other market vendors, the employees of the fish stall are allowed to wash their equipment directly on the square. After market hours, this causes a fishy smell and slippery ground at the Dapperplein on the spot of the fish stall. (M. van Rijn, personal communication, September 29, 2021)

People hanging out and consuming alcohol at the Dapperplein

Residents commonly bring up how they feel uncomfortable at the Dapperplein because of people, largely men, that hang around the square, often consuming alcohol. Even though these people do not necessarily interact with bypassers and/or residents, it may cause an uncomfortable atmosphere at the Dapperplein. Martien van Rijn explains how there live a relatively high number of people with mental challenges in the Dapperbuurt. Their mood at times may clash with other residents. For parents that live near the Dapperplein, this is a reason not to let their children play outside in the evening.

(M. van Rijn, personal communication, September 29, 2021) (J. Aelen, personal communication, November 4, 2021) (X. Goupillon, personal communication, November 4, 2021)

Figure 14: A car crossing the Dapperplein during opening hours of the market.

Conclusion

As can be concluded from this section, both children and adult residents associate the Dapperplein with an experience of feeling unsafe. They also experience a lack of hygiene at the square.

4.4 Where the children currently play, and what aspects of these locations make it (not) suitable for play

Now that we have an understanding of the experience of the Dapperplein by children and adult residents, it is relevant to know where the children currently perform physical activity by playing outside and what aspects make these places suitable or not suitable according to them. This is therefore examined during workshop 1.

During that workshop a map of the Dapperbuurt is presented. Letters on the map correspond with pictures of playgrounds of the Dapperbuurt. The children choose a playground that they want to share their opinion about. They then take a template and stick the picture on it and write down (1) What they call the playground, with whom they go there and how often, (2) What you can do at the playground, (3) things they like about the playground (4) things they dislike about the playground (5) what the playground would look like if they could change it. Figure 15 shows a selection of the playgrounds that the children picked to discuss, and the annotations by the children.

Note how most children picked to discuss the playgrounds that are nearest to their house. Some also pick a playground that is near to the house of a friend. This confirms the insight of the LIKE project on how children of primary school age have a smaller action radius than those of high school age (Emke et al, 2022, Article in preparation).

Also note how the children point out how it feels comfortable and safe to have people around while they play.

Nuri wrote down what he liked about one of the playgrounds: "Fun, many people". He explained how he feels more comfortable and safe when there are people around.

However, note how not all people that are around make the children feels comfortable and safe while playing.

Mustafa indicates that a bad thing about a playground is: *"Jan de Vuilisman is annoying."* He and other children then share stories about how this men, whom that nicknamed "Jan de Vuilnisman" makes them feel uncomfortable.

It can also be noted how hygiene is important to the children.

Hakim shares how the playground in front of his house is dirty. There are often trash bags there. Naima shares how she does not like one playground since there are rats.

From this can be concluded that there is an opportunity in designing an intervention that invites more people to the Dapperplein apart from inviting children to perform physical activity at the Dapperplein. Additionally, it can be concluded that there lies an opportunity in improving hygiene at the Dapperplein.

Natuur Moskee plein

What you can do here:
Chilling, playing, being in a relationship - Mustafa

What you like about it:
You can eat candy and other snacks - Mustafa

What you don't like about it:
"Jan de Vuilisman" is annoying. - Mustafa

The key of the playground should not be with "Jan de Vuilnisman", not with anyone else but the municipality. – Mustafa

Osso tuin

What you can do here:
Tic tac toe, climbing, sitting, sliding, selling fake ice cream. - Hakim

What you like about it:
In front of my house, always there, I made memories here. - Hakim

What you don't like about it:
Noise nuisance, many garbage bags and rats. - Hakim

Hakim would change to the playground:
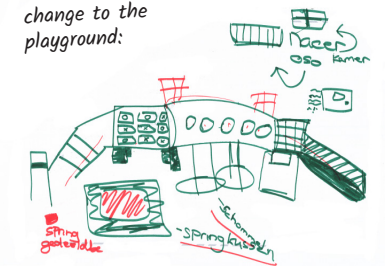
Kooitje

What you can do here:
Soccer, sports equipment en basketball. - Jasmine

What you like about it:
I live here and you can do sports and play. - Jasmine
Fun, many people. - Nuri

What you don't like about it:
People drinking beer - Nuri

What Nuri and Nasira would change to the playground:
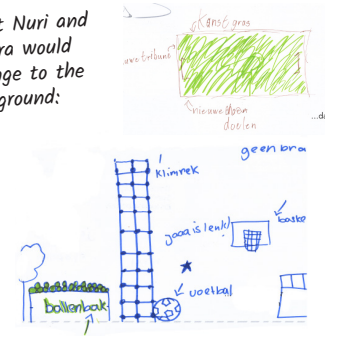
Rode plein

What you can do here:
Playing - Nasira

What you like about it:
That they have a swing. - Nasira

What you don't like about it:
There is a graveyard (...) and the turning-thing is slow. - Nasira

I would like to have a hopscotch here. - Nasira

- Playgrounds that the children picked to dicuss
- Playgrounds that the children didn't pick

Figure 15: Playgrounds in the Dapperbuurt, named by the children and with their annotations.

4.5 Current initiatives to increase physical activity of youth at the Dapperplein and their challenges

Traffic poles

To address the problem of cars crossing the Dapperplein, traffic poles were installed, as shown in figure 16. The traffic poles can not be installed permanently, since the market people need to enter the square with their cars in order to build their market stall in the morning, and to take down the market stand at the end of the market. Therefore, the traffic poles were agreed to be removed by market people in the morning, and placed back by residents during the evening hours. However, according to Jeroen Aelen the market people were not amused with the agreement and placed the traffic poles in their market storage space where the residents and municipality can not enter. This initiative therefore ended with no result.
(M. van Rijn, personal communication, September 29, 2021) (J. Aelen, personal communication, November 4, 2021)

Figure 16: Traffic poles that were placed to prevent cars from driving on the Dapperplein.

The "Dappere bomen"

As it is difficult to arrange space at the Dapperplein, due to the market that consumes the square's space by day, movable objects were placed at the Dapperplein. These objects, the "Dappere Bomen", are tree basins that by night (when moved to the centre of the square) block cars from crossing the square. The objects thereby aim to create a safer area for residents to hang out and for children to play. In the morning they can be moved aside to make space for the market. This is done by using an electric hand pallet truck, as shown in figure 17.
Unfortunately, it later turned out that the "Dappere bomen" were not used as intended. This will be discussed in section 6.4. This initiative therefore was not as successful as intended.
(M. van Rijn, personal communication, September 29, 2021) (J. Aelen, personal communication, November 4, 2021) (X. Goupillon, personal communication, November 4, 2021)

Figure 17: The "Dappere bomen" can be moved using an electric hand pallet truck. (Photo: Maarten Poorter)

Sport Nation activities

Sport Nation is an independent institution that organises sports events for children on Sundays when there is no market at the Dapperplein, typically once or twice a month. An impression of these events is given in figure 18. This initiative is successful in organising sports events. Nevertheless, since the Dappermarkt is open 6 days a week, the events can be held exclusively on Sundays. This limits the impact of the initiative. (C. Opoku, personal communication, Oktober 4, 2021)

Figure 18: A picture of a sport event organised by Sport Nation at the Dapperplein. (Photo: Sport Nation)

Alcohol restriction

To improve the atmosphere and perception of safety at the Dapperplein, the municipality set an alcohol restriction at the square about three years ago. It is not allowed to consume alcohol at the Dapperplein. The effect of the initiative however is near to absent, since the people that previously spent time sitting and consuming alcohol at the Dapperplein, now drink elsewhere, and return to the Dapperplein to sit. The atmosphere at the square thereby remains affected by people who consumed alcohol sitting there. (M. van Rijn, personal communication, September 29, 2021)

Removal of benches

After the municipality received repetitive complaints by residents of the Dapperplein, the municipality removed benches at the square, to prevent people from sitting and consuming alcohol. However, the effect of this initiative is considered low, since consequently the tree basins were used to sit on and drink instead. (M. van Rijn, personal communication, September 29, 2021)

Challenges for these initiatives

Reviewing the mentioned current initiatives, reveals challenges that limit their impact.
Firstly, due to the many stakeholders that use the public environment of the Dapperplein, especially the market related stakeholders, it is difficult to bargain a physical space for an initiative to use to increase physical activity of youth.
Moreover, as demonstrated by the problematic implementation of the traffic poles, market vendors do not seem to be willing to make an effort to improve safety for residents at the Dapperplein. Moreover, there seems to be a need for a more radical (design) intervention at the Dapperplein. This can be argued since the way in which people that consume(d) alcohol continue sitting regularly at the Dapperplein shows how straight forward interventions such as an alcohol restriction or the removal of benches has little impact.

4.6 Concluding; Problem statement, resulting design goal and criteria and wishes for the design

The exploration of the context and problem, led to a problem statement, that resulted in a design goal and design criteria.

Problem statement

The problem
Children of 10 to 12 years old living in the Dapperbuurt at the Dapperplein rarely perform physical activity through playing outside, after the Dappermarkt is cleared up (18:30).

Why this is the case
- There are few stimuli for play.
- The children experience a feeling of unsafety and are not allowed by their parents to be at the Dapperplein at night, due to people hanging and consuming alcohol.
- Parents are concerned about traffic crossing the square.
- The children experience a lack of hygiene, due to left-overs of the Dappermarkt.
- Initiatives that aim to increase the physical activity of youth at the Dapperplein seem to face reluctance of the market vendors.

Why it is a problem
A lack of physical activity can lead to diseases such as Obesity. As habits of performance of physical activity tend to stick with a person from childhood, it is especially relevant to encourage children to perform physical activity. For children, playing outside is a source of physical activity (Bento & Dias, 2017). Children of primary school age old have a smaller action radius when it comes to playing outside, compared to children of high school age (Emke et al, 2022, Article in preparation). It is therefore important that their direct environment provides opportunity for them to play outside.

Design goal
In order to tackle the problem statement the project aims to fulfil the following design goal:

> I want children of 10 to 12 years old living in the Dapperbuurt to be able to perform physical activity through playing outside at the Dapperplein daily after the market is cleared in a safe and comfortable way, by adding stimuli for play and improving safety at the Dapperplein, through co-creation with children of the Dapperschool.

Note how tackling the issue of hygiene is not included in the design goal, as ideation on this topic will likely result in ideas where the children are not the users of the design, which would be in conflict with the method of co-creation with children.

Criteria and wishes for the design
The design needs to meet criteria and wishes (shown below) in order to be a success. These are later used to validate the value of different ideas.
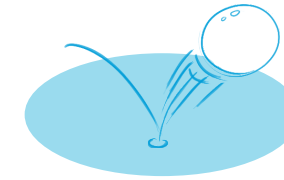
Offering opportunity for physical activity and play
The Dapperplein currently provides few stimuli for play. The design therefore needs to offer opportunity for physical activity and play.

Increasing the feeling of safety
Since the lack of safety was indicated to hold the children back from performing physical activity and playing at the Dapperplein, the design needs to increase the feeling of safety.

Making the Dapperplein a more vibrant sqaure
Since children indicated to feel more comfortable while playing when there are people around (section 4.4), a wish for the design is to make the Dapperplein a more vibrant sqaure.

Used in harmony with the Dappermarkt
The design needs to be able to be used in harmony with the Dappermarkt, to increase likelihood of implementation. This is because, as explained in section 4.5, market vendors can be stubborn when it comes to cooperating for change of the situation at the Dapperplein. Their resistance would be decreased when the design can be used in harmony with the Dappermarkt.

A unique fit for the Dapperplein
This project explored the context of the Dapperplein elaborately, which gives it the potential to generate a custom-made design that goes beyond the beaten track of what is commonly designed for public squares. Using this potential is desirable, since it could lead to a renewing design that fits its context well.

Chapter 5
PHASE II: IDEATING AND SELECTING

This phase focuses on ideation and the selection of ideas that result from the ideation. The children and I generated ideas to fit the design goal during workshop 2. The set-up of this workshop is explained at the right. The questions that are answered during this phase and the approach of answering these are presented at the right.
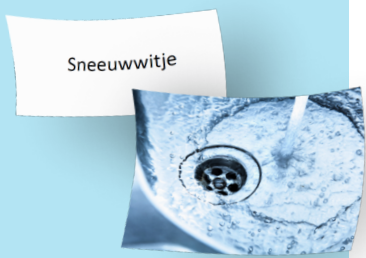
⬤ **What ideas are gathered during the co-creation workshops, interviews and personal ideation? (section 5.1)**
Answered by collecting ideas that were generated during workshop 2, during expert interviews and during personal ideation.

⬤ **Which concept directions derived from the gathered ideas? (section 5.2)**
Answered by first selecting ideas based on how well they fit the design goal and the diversity that they add to the selection. Then, organising the selected ideas in a plot based on how well they fit the design goal and how new and special they are, resulting in four concept directions.

Workshop 2

| **Workshop 1**
Goal
Getting to know one another, providing an introduction to designing and exploring the context and problem | **Workshop 2**
Goal
Checking whether the problem statement resonates with the children, and generating ideas | **Workshop 3**
Goal
Introducing the concepts, evaluating each concept, and iterating on concepts | **Workshop 4**
Goal
Testing and evaluating a (simple) prototype of the concept, and iterating on it |

3 sessions with a total of 13 participants (of which some participated in multiple sessions)

Main activities during the workshop

The *braindump* on different aspects of the problem

During this activity the children shared the ideas for solutions to the problem statement that were on the top of their minds. The problem statement was divided in different aspects. These aspects were written on pieces of paper, as shown below. To brainstorm, one of the aspects is picked and placed on a large sheet of paper. The children then come up with ideas to tackle the one aspect. The ideas are written and drawn on the sheet of paper. At the end of the three sessions all aspects are covered.

The *problems are opportunities* brainstorm

This activity explored the question: what if the identified problems at the Dapperplein, are taken as opportunities for solutions? The children picked an aspect of the problem statement, e.g. people use the Dapperplein to hang out and consume alcohol. The children are then asked to come up with ways of playing and doing sport that make use of that aspect of the problem statement, e.g. the people that hang out and consume alcohol at the Dapperplein could be objects in a parkour, when they see you, you need to go back to start.

The *random stimulus* brainstorm

This activity explored the question: what if the identified problems at the Dapperplein, are taken as opportunities for solutions? The children picked an aspect of the problem statement, e.g. people use the Dapperplein to hang out and consume alcohol. The children are then asked to come up with ways of playing and doing sport that make use of that aspect of the problem statement, e.g. the people that hang out and consume alcohol at the Dapperplein could be objects in a parkour, when they see you, you need to go back to start.

5.1 Ideation

Ideation primarily took place in collaboration with the children, during workshop 2. Apart from this, ideas popped up during expert interviews, and during my personal ideation. From all of the collected ideas, a selection was made based on the ideas' potential to fit the design goal and/or whether they add diversity to the selection. All selected ideas are explained in appendix B, three of which are shared in figure 19.

Engaging residents of the Dapperbuurt in play

Origin of the idea

Zara suggests playing Ding Dong Ditch at the Dapperplein. In this game she and her friend ring a bell of one of the residents, then they run away and look from a distance how the resident opens the door and is confused as no one is there.

The indicate to feel more comfortable and safe when there is other people around (section 4.4).

Meeting up with a sports-buddy increases likelihood of creating a habit of performing physical activity (personal ideation).

Description of the idea

Zara's idea points out how it could be fun to involve other residents (both children and adults) of the Dapperplein in play, e.g. by being sport buddies with a resident of the Dapperplein and meeting up with this person to do sports at the Dapperplein together.

Value of the idea

This idea might increase the feeling of safety, as it suggests meeting up with other people at the Dapperplein.

A drawing by Zara

Figure 19: Three ideas out of the selection of ideas.

Physical barriers for traffic that can be removed

Origin of the idea

Jamal suggests that concrete poles could be drawn from the ground to stop traffic from passing the Dapperplein. In the morning, by using a key, the poles are unlocked and hidden in the ground to allow the cars of the market vendors to park on the Dapperplein to build their stands.

Description of the idea

Concrete poles could be drawn from the ground to stop traffic from passing the Dapperplein. In the morning, by using a key, the poles are unlocked and hidden in the ground to allow the cars of the market vendors to park on the Dapperplein to build their stands.

Value of the idea

By forming a physical barrier for traffic to cross the Dapperplein, this idea could increase safety.

A drawing by Omar
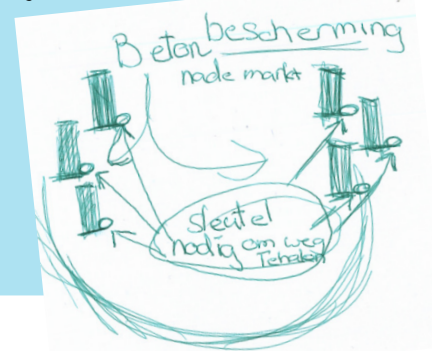
Adding a market stall to the Dappermarkt dedicated to encouraging physical activity of children in the Dapperbuurt

Origin of the idea

"I always need to join my mother when she goes to the market. It's boring."
Naima

"We should have our own market stall."
Zara

Description of the idea

A market stall at the Dappermarkt would be run by the municipality and is dedicated to children. At the stall children can connect to potential playmates, give their input on sports events that the municipality is organising, organise a sports event themselves, or play games with other visitors at the market stall.

Value of the idea

This idea might create a feeling with the children that their needs and wishes concerning doing sports and playing outside in the Dapperbuurt are taken seriously. It is an easy and accessible way for the children to play at the market. Furthermore, they can give their input to the municipality employees behind the market stall, potentially resulting in better fitting interventions.

5.2 Determining concept directions

The selected ideas (shown in appendix B) are organised along two axes to determine which of the ideas carry the most potential to be developed into concepts. Figure 20 shows the plot. Note how the x-axis indicates how well the ideas fit the design goal. The y-axis indicates how new and special the ideas are. Although ideas that are not new and special can still provide fitting solutions, the latter axis is added to favour ideas that offer new perspectives and were not tried before. Ideas that end up in the upper right quadrant are both fitting the design goal well, and are new and special. These ideas, therefore form the concept directions, as indicated in the figure by roman numbering. The concept directions are as follows:

Concept direction I:
"Verplaatsbare speeltoestellen"

Concept direction II:
"Marktkramen zijn speeltoestellen"

Concept direction III:
"Dapper Game"

Concept direction IV:
"Speelprikkels"

These concepts directions are developed to concepts as part of phase III Conceptualisation, as will be discussed in the next chapter.
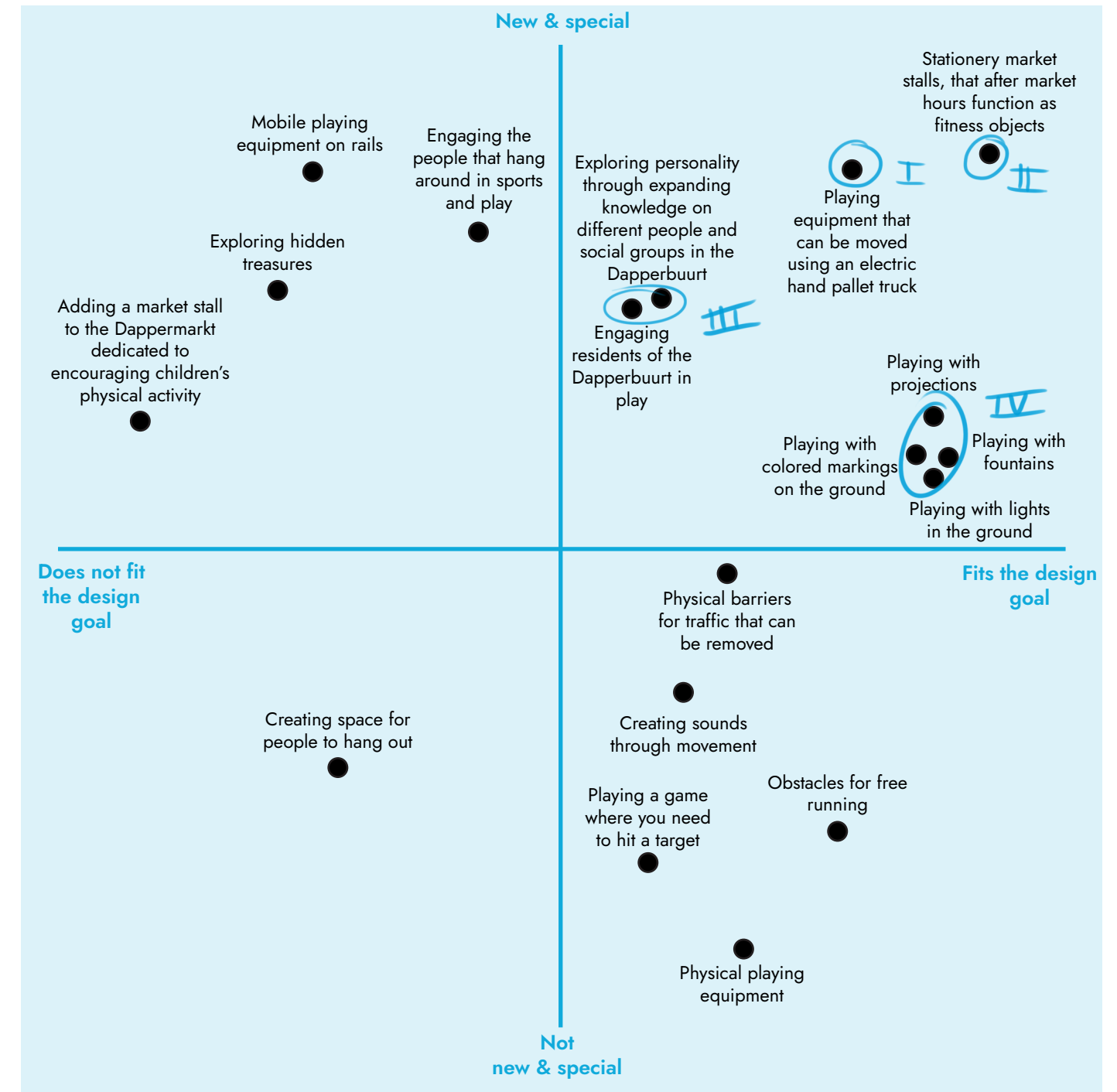
Figure 20: The selected ideas plotted based on how well the ideas fit the design goal (x-axis) and how new and special the ideas are (y-axis), revealing four concept directions.

Chapter 6
PHASE III: CONCEPTUALISATION

The four concept directions that resulted from the ideation process that is described in the previous phase are developed into concepts as part of this phase. During workshop 3, the set-up of which is explained at the right, the children evaluated the concepts and iterated on the concepts. The concepts were also evaluated by the municipality. After this, it is concluded what concept holds the most potential and will therefore be prototyped, tested and optimised in the next phase.

The questions that this chapter answers and their sections are presented at the right.

● **What are the four concepts? (Section 6.1)**
Answered by presenting the four concepts.

● **How do the children that participate in the co-creation workshops evaluate the concepts and iterate on the concepts? (Section 6.2)**
Answered by collecting the reactions of the children to the concepts and their ideas for iterations, during workshop 3.

● **How does the municipality evaluate the concepts? (Section 6.3)**
Answered by an online meeting with three municipality employees.

● **What concept is chosen to further develop? (Section 6.4)**
Answered by considering the evaluation of the concepts by the children and municipality and my view on the potential of the different concepts.

Workshop 2

Workshop 1	Workshop 2	Workshop 3	Workshop 4
Goal Getting to know one another, providing an introduction to designing and exploring the context and problem	*Goal* Checking whether the problem statement resonates with the children, and generating ideas	*Goal* Introducing the concepts, evaluating each concept, and iterating on concepts	*Goal* Testing and evaluating a (simple) prototype of the concept, and iterating on it

2 sessions with a total of 13 participants

Main activities during the workshop

Introducing the concepts

During this workshop I introduced the four concepts. One by one, I introduced the ideas and inspiration that led up to the concept, before explaining its content by showing the children sketches (as will be shown in section 6.1).

Evaluating the concepts

After the introduction of one a concept, the children evaluated each concept. They told me what they thought are the strengths of the concept, as well as the weaknesses.
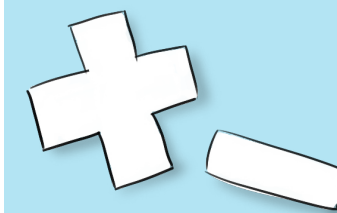
Iterating on the concepts

During the introduction of the concepts, the children tell me ideas and iterations that pop up for them. After the evaluation of all concepts, the children chose the concept that speaks to them most. They brainstorm on how to iterate on the concept, by writing and drawing the ideas on a large sheet of paper. After this, on a new sheet of paper, we make a scenario together of the use of the renewed concept.

6.1 Concepts

The concept directions that derived from a selecting the ideas that were both most fitting with the design goal as well as most novel (as shown in the previous chapter) formed the base of four concepts: "Verplaatsbare speeltoestellen", "Marktkramen zijn speeltoestellen", "Dapper Game" and "Speelprikkels".

In the following a one pager of each concept is presented.

Concept "Verplaatsbare speeltoestellen"

Ideas that led to this concept
- Playing equipment that can be moved using an electric hand pallet truck (Appendix B)

Leading question
What if we could create mobile playing equipment that is moved to the side of the Dapperplein during the market and moved to the centre of the square to play with after the market?

Description
This concept suggests mobile playing equipment, using an electric hand pallet truck to move the playing equipment to the side of the Dapperplein (during market hours) or to the centre of the Dapperplein (after market hours). Mobile playing equipment would be suitable for the Dapperplein, since it uses the space at the Dapperplein once it is available (after market hours), and does not stand in the way of the market (during market hours). The concept's design stands on four legs, so the pallet truck can be inserted underneath. To move the design, the same pallet truck could be used as for the "Dappere Bomen" (as explained in section 4.5). Since the pallet truck is heavy, especially when carrying the playing equipment, the pallet truck would be handled by volunteering adult residents.

The playing equipment would be of an abstract shape. In this way it functions as an art object during market hours. When moved to the centre of the Dapperplein as playing equipment, it might prompt children to play creatively with it due to ambiguity of the abstract shape.

Value
- It offers physical playing equipment that children can use to play outside and perform physical activity.
- When located at the centre of the Dapperplein, the playing equipment blocks cars from crossing the square, thereby increasing safety.
- It fills the open space at the Dapperplein after market hours with physical objects, this might replace the possible feeling of being out in the open and vulnerable with a feeling of being supported, comfortable and safe.
- The abstract shape blends in as an art object during market hours. It also creates a nice view after market hours, and might prompt the children to play creatively with it due to ambiguity of the abstract shape.

EVENING

Residents move the playing equipment to the centre of the square

MORNING

Market vendors move the playing equipment to make space for the market

Applying the mechanism of "De Dappere Bomen"

DAPPERE BOMEN

lifting & moving using an electrical handpallet truck

PLAYING EQUIPMENT

Playing with Ball

As long as the bottom remains the same, the playing equipment can have any shape

Relaxing   Playing   Moving

Because of its abstract shape, it functions as art object during the day.

Concept "Marktkramen zijn speeltoestellen"

Ideas that led to this concept

- Stationery market stalls, that after market hours function as fitness objects (appendix B)
- Obstacles for free running (appendix B)

Leading question

What if parts of the market stalls would be stationary and function as playing equipment after market hours?

Description

This concept suggests stationary playing equipment that during market hours functions as a part of the construction of a market stall. Market vendors attach components to the playing equipment to form their market stall. When clearing up the market, they take these components with them. After market hours, the playing equipment can then be used by children and other interested residents to play and perform physical activity.

Some of the playing equipment is shaped like market stalls. The concept's design might create an iconic image for the Dapperplein, as the Dappermarkt (with which the Dapperplein is associated) is also visualised after market hours.

The playing equipment is especially suitable for Free running and fitness. Free running is a sport where you run a parkour, passing various physical obstacles on the streets. The obstacles are usually walls and other objects that are part of the man-made public environment. It is about passing the obstacles as quickly as possible, as well as applying various tricks to add artistic value. Various children pointed out during the workshops how they would like to have objects for free running available at the Dapperplein, to exercise this healthy activity.

Even though fitness is widely considered not to be healthy for children of the age 10 to 12 and should therefore not be encouraged (Malina, 2006), adding opportunities for fitness to the playing equipment could invite a broader range of residents to use the equipment, which apart from being good for these resident's health, contributes to a feeling of safety for the children. This is due to more people being present at the Dapperplein in the evening, leading to a more secure feeling, as pointed out in section 4.4.

Value

- It offers playing equipment that children can use to play outside and perform physical activity.
- The concept's design blocks cars from crossing the square, thereby increasing safety.
- It fills the open space at the Dapperplein after market hours with physical objects, this might replace the possible feeling of being out in the open and vulnerable with a feeling of being supported, comfortable and safe.
- Not only the children, but also other residents can use the equipment, which is good for their health, but also contributes to a feeling of safety for the children. This is due to more people being present at the Dapperplein, as explained in section 4.4.
- The concept's design might create an iconic image for the Dapperplein. This could increase the feeling of togetherness in the neighbourhood's community. It could also attract visitors to the Dappermarkt, which might be a reason for market vendors to be on board with this concept, which increases the likelihood of implementation.
- Additionally, the market vendors save time that they would otherwise invest in building and deconstructing their stalls. This makes the concept of interest for the market vendors, which increases likelihood of implementation.
- The design does not rely on the involvement of volunteers (in contrast to the concept "Verplaatsbare speeltoestellen"). After market hours, the playing equipment can be used by the children straight away.

Essential parts to a market stall:
Awning
Board
Construction

Creating objects for FITNESS & FREERUNNING

free running
sprint! jump land
steps
Fits construction for market stall

in addition of an awning & board it functions as market stall

Sports during the evening

Its marketstall-like shape leaves an iconic view at night
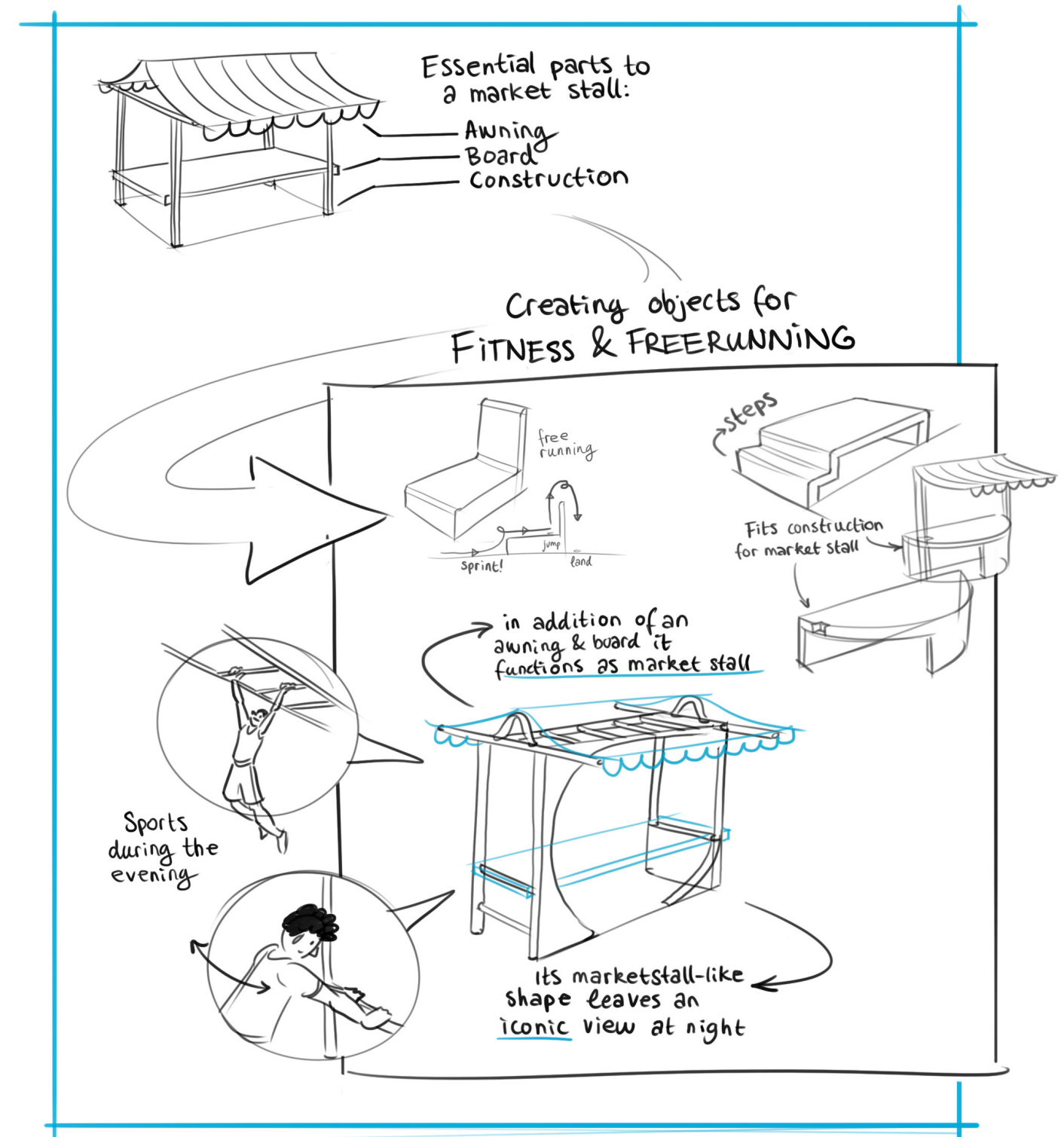
Concept "Dapper Game"

Origin of the concept

- Exploring personal identity through expanding knowledge on different people and social groups in the Dapperbuurt (appendix B)
- Engaging residents of the Dapperbuurt in play (Appendix B)

Leading question

What if children's drive to explore their personal identity could motivate them to perform physical activity?

Description

Through the "Dapper Game" app children could challenge one another. Challenges are connected to exploration of personal identity through expanding knowledge on different people and social groups in the Dapperbuurt. All challenges take place outside and include moving. An example of a challenge could be to be the first to take a picture together with someone that expresses a belief through their clothing and interview the person to gain an understanding about their belief. Children form teams of two and meet at the Dapperplein to play the "Dapper Game". Points are earned based on how brave ("Dapper" in Dutch) one is, and how quickly challenges are completed. Challenges take place in the Dapperbuurt. After each challenge the children return to the Dapperplein to determine the winner.

Value

- The idea uses children's intrinsic motivation to explore their personal identity to motivate them to do physical activity.
- The children learn about different people and social groups in the Dapperbuurt, which might help them in their journey to define their own personality. Additionally, this might increase their feeling of safety, because they get to know more people in the Dapperbuurt and might gain trust in the community to be there for them when they feel threatened in the public environment of the Dapperbuurt.
- The children are familiar with playing with their friends through apps on their phone, which makes adaptation of the concept's design by the children likely.

① Connect to friends
② Start a challenge
③ Collect points in the Dapperbuurt
④ Return to the Dapperplein to determine the winner

tap to START

Team A   Team B

CHALLENGE #1
Take a picture together with someone who is wearing something that expresses his/her believes/religion and interview the person about it.

CHALLENGE #2
Give a compliment to someone you don't know.

CHALLENGE #3
Have a conversation with a statue and find out what the statue is about

Who's fastest?

Who's most "dapper"?

Exploring the Dapperbuurt to collect points

Concept "Speelprikkels"

Origin of the concept
- Playing with projections (appendix B)
- Playing with colored markings on the ground (appendix B)
- Playing with fountains (appendix B)
- Playing with lights in the ground (appendix B)

Leading question
What if the design offers playing opportunities while not taking up any physical space?

Description
This concept suggests four techniques that do not take up any physical space, yet offer playing opportunities. Not taking up space is relevant as arranging space at the Dapperplein is a battle (as described in section 4.5). The Dappermarkt and restaurants need space to operate at the Dapperplein. An initiative that wants to consume space at the Dapperplein can therefore expect friction with these parties. Therefore this concept explores techniques that offer playing opportunities without taking up any space.

The first suggested technique is to embed lights in the ground. The second technique that is proposed is to apply colored markings on the ground. Thirdly, it is suggested to embed fountains in the ground. Lastly, the technique of projecting moving patterns on the ground is proposed. Different options on how the children could play with installations based on these techniques are displayed at the right.

Value
- The design is flat on the ground, and thereby not an obstacle for the Dappermarkt or restaurants at the Dapperplein. This makes the concept more feasible, as objections of market vendors are likely avoided.
- The design can be cleaned as part of the current cleaning routine (with municipality cleaning wagons), and will therefore not decrease hygiene at the Dapperplein, a concern that is voiced by residents as explained in section 4.3.

The teams battle to be the first to cover all the lights of their colour

Team White

Team Blue

PLAYING WITH LIGHTS

Running laps...

...Untill a fountain starts!

PLAYING WITH FOUNTAINS

PLAYING WITH COLOURED MARKINGS ON THE GROUND

Balancing on the moving projections

PLAYING WITH PROJECTIONS
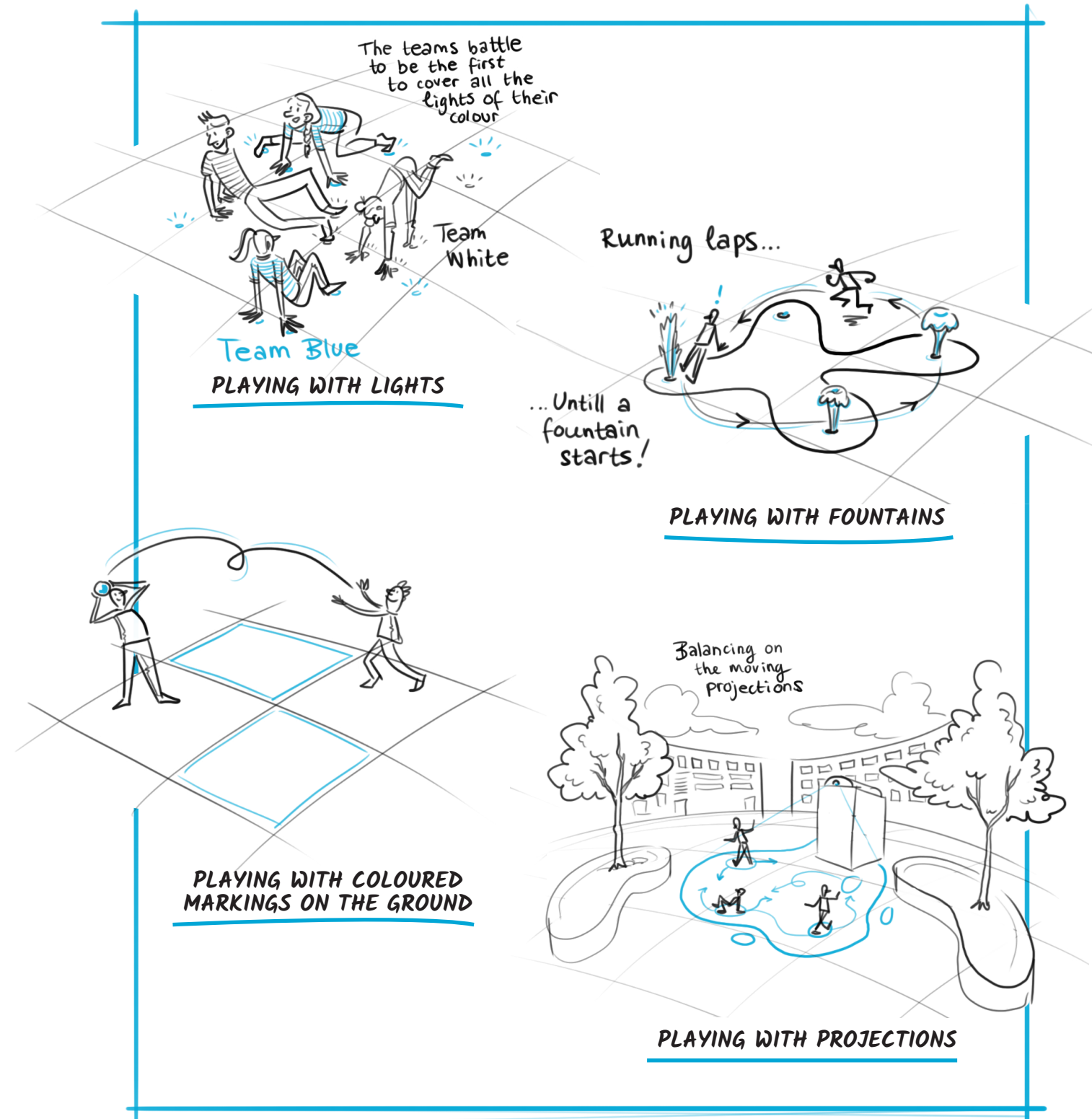
6.2 Evaluation and iteration by children that participated in workshop 3

This section discusses the outcomes of workshop 3. During this workshop, the children shared their opinions about the concepts, as well as their ideas on how to improve each concept. After this, the children iterated on the concept that appealed to them the most.

Evaluation of the concepts by the children

Figure 21 shows the positive and negative aspects of each concept as indicated by the children. Note how the children voice practical concerns, e.g. the design needs to be safe for them not to fall. Also note how some of the children are apprehensive towards other residents of the Dapperbuurt, e.g. suspecting they will vandalise the design, or being unsure whether other residents would like to cooperate.

Most children (8 out of 11) elected the "Dapper Game" as their overall favourite concept. One child chose the "Marktkramen zijn speeltoestellen"

as his overall favourite. The remaining two children did not indicate their preference.

The variation in immersiveness of the concepts might have influenced the evaluation. Some concepts, such as "Dapper Game", are focused on designing the play itself, whereas other concepts, such as "Verplaatsbare speeltoestellen", are more focused on designing a way to provide equipment for play, where users would come up with ways of play themselves. It could therefore be that the first was more appealing to the children, as they felt more immersed in the concept and its purpose was easier for them to understand.

Concept "Verplaatsbare speeltoestellen"	
Positive remarks on the concept	*Negative remarks on the concept*
Mustafa: "More space."	Mustafa: "It can be stolen."
Jamal: "Making it movable is a good idea."	Nahla: "The shape is not nice."

Figure 21: The positive and negative aspects of each concept as indicated by the children.

Concept "Marktkramen zijn speeltoestellen"	
Positive remarks on the concept	*Negative remarks on the concept*
Mustafa: "I vote for this one ("marktkramen zijn speeltoestellen"). But then it needs to be convenient for both parties: for the market vendors and for the children."	Omar: "If this (the market stall) would stay on the square at night they will set it on fire."
	Youssef: "They would throw illegal fire works in here, and then they would run away. Or they would have fuel, and then they set it on fire."
Jamal: "It is quite a good idea, because you do not need to remove the market stalls."	Naima: "Some of the market stalls are wagons. For instance the one where they sell cheese. That is a van."
	Nuri: "The idea is a bit bad, because you need to consider the weather; if it is wet then you can fall on your head and that is not fun."
	Jamal: "It might take a long time to convert it (from market stall to playing equipment)."

Concept "Dapper Game"	
Positive remarks on the concept	*Negative remarks on the concept*
Mustafa: "Fun that you can play with friends."	Mustafa: "I think a con is that people do not like it when you take pictures of them." Youssef: "Yes, if I just talk to people they already get angry."
Nasira: "It is in teams right? That is nice. Working together is fun."	
Naima: "It is like Pokemon Go."	Mustafa: "We do this anyway: Challenges."
Jasmine: "This is all things mixed together. No one would just come up with this."	Nuri: "It is inconvenient when we need Wifi for the game." Jamal: "Yes, no wifi. Or the Wifi needs to be provided." Nuri: "My 4G is already finished." Jamal: "Yes, and you pay 10 euros a month."

Concept "Speelprikkels"	
Positive remarks on the concept	*Negative remarks on the concept*
Nuri: "The fountains are fun!"	Nuri: "You can fall down."
Jamal: "The lights are also fun."	
Jamal: (About the projections) "Oh, that is nice! And it can be placed everywhere."	

Iteration on the concepts by the children

When the children that participated in workshop 3 were introduced with the concepts, they not only gave their opinion about them (as shown in the previous section), but also had ideas on how to improve the concepts, as will be discussed in this section.

The ideas that the concepts sparked

The children had ideas to iterate on the four concepts. A selection of these ideas is shared in figure 22.

Scenarios to show the iterations on the concept that appealed most to them

As mentioned ealier in this section, the concept "Dapper Game" was generally most appealing to the children. During workshop 3 two teams of children therefore iterated on this concept and both created a scenario to describe their iterations. The first scenario follows a girl that gets challenged by a friend to go outside to find Peppa Pig (a cartoon figure in the game). The second scenario involves two teams who play the Dapper Game together and battle in various challenges. Both scenarios can be viewed in appendix C.

Jasmine, on the shape of the playing equipment: "It could be nicer, for instance the shape of a horse, or Peppa Pig (a cartoon figure)."

Nahla points at the drawn image, below a guy climbing on the market stand. "Then here is water!" She would like the risk of dropping into the water when climbing.

Naima: "During the night other people could come (to use the market stalls). They could sell playing equipment for a game, like at a fair."

"Verplaatsbare speeltoestellen"

"Marktkramen zijn speeltoestellen"

Nasira: "This (the lights in the ground) could be a maze."

"Dapper Game"

"Speelprikkels"

Nahla and Jasmine suggest adding Peppa Pig (a cartoon figure that they know from television) to the Dapper Game. Through augmented reality the player can see Peppa Pig in the streets. Peppa Pig would play hide and seek with the player. Once found, Peppa Pig gives a next challenge.

When she was younger Nasira watched a man on television who did storytelling. He created images by using the contrast of layering sand on a flat lightened surface. Nasira suggested that with a lightened surface and sand we could tell and illustrate stories ourselves.
Nasira: "This is also fun! A theatre play. I used to watch a man on television that made figures in the sand and told stories."

Nasira suggests a challenge where contestants play a trading game where they take something that they don't need anymore and trade it for another object with people in public areas. The goal is to end up with a more valuable object than you started off with.
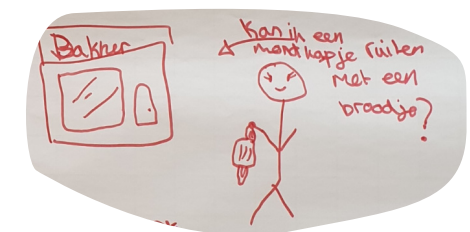
Figure 22: A selection of ideas that the concepts sparked with the children.

## 6.3 Evaluation of the concepts by the municipality

To evaluate feasibility and desirability for the neighbourhood as a whole, three municipality employees (introduced in figure 23) that work in the context of the Dapperbuurt share their view on the four concepts. Appendix D describes a selection of their comments. The next section will summarise their evaluation together with the evaluation of the children that participated in workshop 3, in order to choose what concept to further develop.
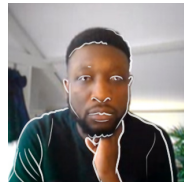
Carlos Opoku
Program manager of sports facilities in the Dapperbuurt

Martien van Rijn
Involved in co-creation activities at the Dapperplein with adult residents
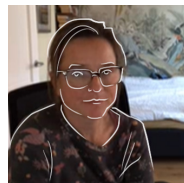
Rodine Oldewarris
Program manager of public space in the district East side of Amsterdam (to which the Dapperbuurt belongs)

Figure 23: The municipality employees that evaluated the concepts.

6.4 Choosing a concept for further development

Now that the concepts are evaluated by both the children that participated in workshop 3, as well as employees of the municipality, it is time to summarise and compare the evaluation in order to determine which concept holds the most potential.

Figure 24 shows an overview of the four concepts, including the evaluation of the municipality employees and the children. Note how the remarks that were part of the evaluation of each concept are organised based on its properties. The coloured line on the left of each property shows the outcome of the evaluation: A red line indicates that the evaluation is negative; An orange line communicates that the evaluation includes both positive and negative aspects; A green line signifies a positive evaluation of the concept's property. The evaluation of each concept adds up (signified in the figure by the horizontal line with a plus sign) to a decision on the continuation or stop to the development of the concept towards the next phase.

Concept	Properties of concept	Arguments for continuation or stop to development of the concept (by children and municipality)
"Verplaatsbare speeltoestellen" **Main value** Efficient use of space enables children to play with playing equipment	The design is mobile using an electric hand pallet truck	According to the **municipality**, the Dappere Bomen turn out not to be used as intended, so it is likely that this concept will be not used as intended either (since its use would be similar to the Dappere Bomen). Also, it has been very hard to arrange space with the market sellers to place the Dappere Bomen, this will be a challenge for this concept as well.
	The design is moved to the center of the square in the evening and moved back to the side in the morning (to make space for the market).	The **children** are concerned that the design can will be stolen. According to the **municipality** it is likely that the market people will demand that the design does not stand in the way of the market in the morning. It is unlikely that anyone will want to take this responsibility (a problem that they notice with the Dappere bomen).
	The objects are abstract shapes	The abstract shape does not appeal to the **children**.

Stop development of this concept.

Concept	Properties of concept	Arguments for continuation or stop to development of the concept (by children and municipality)
"Dapper Game" **Main value** Using the children's curiosity and competitiveness to trigger physical activity	App	According to the **children**, games on their phone are nice. Although, they are concerned that Wifi needs to be provided with the game. According to the **municipality**, This concept does not interfere with the physical environment of the Dapperplein and is therefore relatively easy to implement.
	Doing Challenges	The **children** indicate to be familiar with challenging each other, themselves, and/or joining organised challenges in teams (through the municipality or other (sports) organisations). They are enthusiastic about the opportunities. Although they also mention how this is something that they already do, and not necessarily need an app for.
	Competing against friends	The **children** say to be familiar with games where they compete against one another. They enjoy playing with friends, especially when they can compete in teams.
	Exploring own personality and the personality of others	The behavior of the **children** and the questions that they ask during the workshops indicate that they do explore their personality and the personality of others. However, it remains unclear whether this could drive them to do physical activity. Also, since this behavior comes naturally to them, they might not need an app to encourage them.
	Engaging poeple on the street into play	Some **children** have positive experiences with engaging people on the street in their play, and are excited to do challenges that do so (mostly girls said this). Other children have negative experiences with this, and foresee complications when doing so (mostly boys said this).

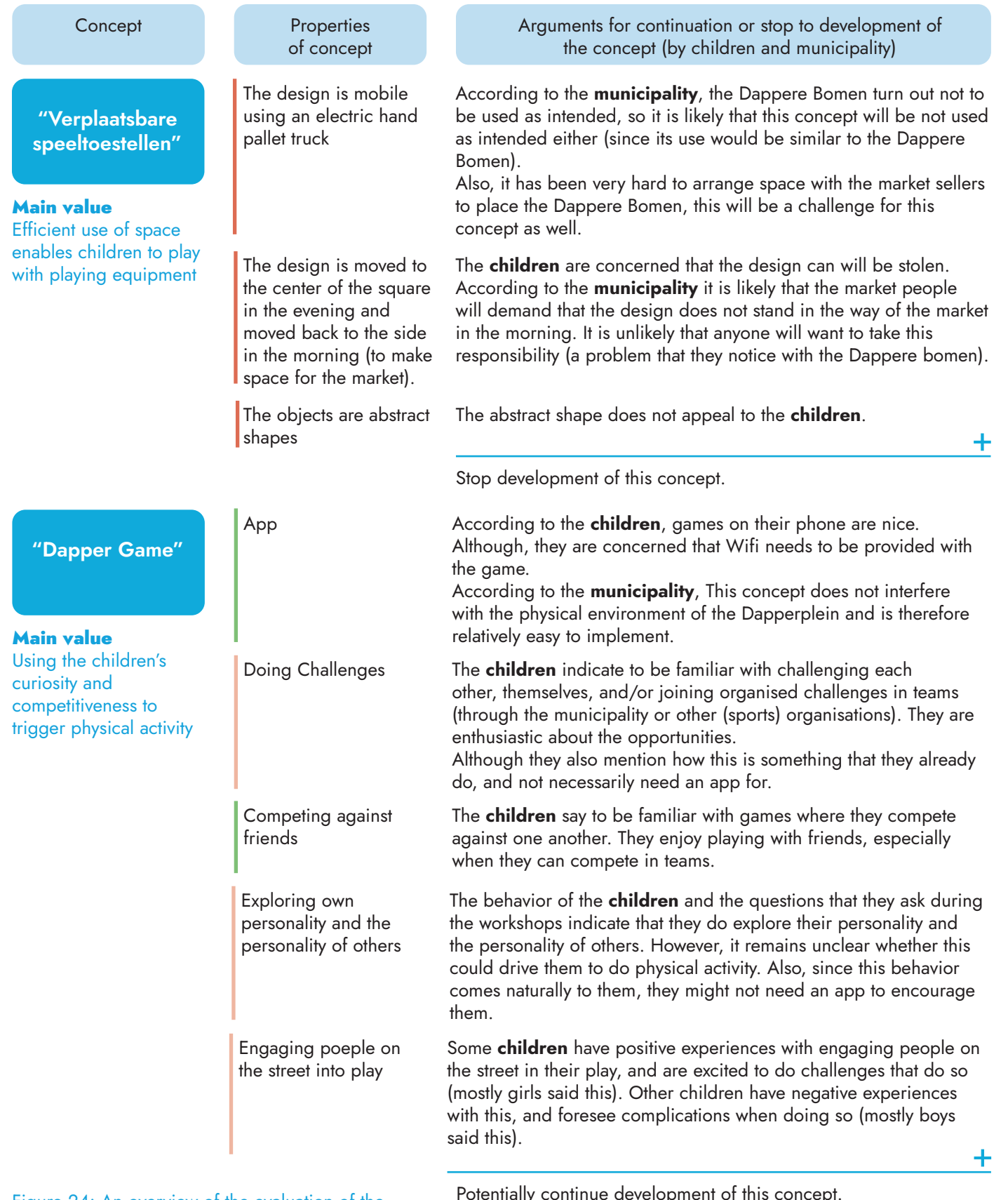Potentially continue development of this concept.

Figure 24: An overview of the evaluation of the concepts by the children and municipality.

Concept	Properties of concept	Arguments for continuation or stop to development of the concept (by children and municipality)
"Marktkramen zijn speeltoestellen"	The design consists of stationary objects	According to the **municipality**, this would solve the problem of cars driving over the square. Although, it potentially blocks the fire brigade when they need to access certain areas of the square in case of emergency. Also, it should not create a spot for people to hang out and consume alcohol. The **children** are concerned that people might vandalize the objects.
Main value Children can play with physical playing equipment. Cars crossing the square are blocked. It is unique and iconic for the Dapperplein.	By day the objects are used as market stalls	The **municipality** elected this concept is as the one they are most enthusiastic about, because of this double function. They argue that combining the use as a market stall by day and an object for play by night is unique. Also, This might safe the market people time building their stand.
	By night the objects are suitable for Free running and fitness	One of the **children** came up with the idea for fitness objects. Other children came up with the idea of free running objects. It needs to be confirmed whether other children also resonate with the these types of sports and play.
	Iconic for the Dapperplein	According to the **municipality**, the Dapperplein is known for the Dappermarkt. By visualizing the market stalls through the playing equipment during the night, you create an iconic image. ✛
		Potentially continue development of this concept.
"Speelprikkels"	Lights in the ground	According to the **municipality**, this is extremely expensive to implement. Also, the lights are likely too fragile for the location of the Dapperplein (due to intensive cleaning of the square after the market). Besides, the concrete is recently redone, so tearing it open again will cause resistance with the decision makers.
Main value Not taking up physical space	Fountains in the ground	Again, according to the **municipality**, this is extremely expensive to implement. Besides, again, the concrete is recently redone, so tearing it open again will cause resistance with the decision makers.
	Painted markings on the ground	The **municipality** considers this aspect of the concept to be feasible. The municipality is even already in conversation with a company that could arrange this.
	Projections on the ground	This aspect is considered feasible by the **municipality**. The municipality sees potential in the projections as long as the light does not enter houses of people. ✛
		Stop development of this concept.

As shown in figure 24, the concept "Verplaatsbare speeltoestellen'' is evaluated with solely negative remarks, and therefore will not be further developed. Of the concept "Speelprikkels" two aspects (paint on the ground, and projections on the ground) are considered promising, especially by the municipality. However, since the municipality is inspired to work on the design and implementation of these aspects themselves, these aspects are not further developed as part of this project. The concepts "Marktkramen zijn speeltoestellen" and "Dapper Game" both are evaluated positively. In a comparison of the two concepts, "Marktkramen zijn speeltoestellen" strikes as the best concept. This is why:

- The concept "Dapper Game" does not increase safety, whereas the concept "Marktkramen zijn speeltoestellen" increases safety by blocking cars from crossing the Dapperplein, and potentially attracting people whose presence makes the Dapperplein feel more safe.
- An app like the Dapper Game would have to compete for the children's attention among other apps developed by large companies (such as Pokemon GO, Candy crush and Fortnite). For example Pokemon GO has cost roughly 453,5 thousand dollars to develop (S., 2016). Also, there are several available applications that cover (parts of) the game described in the concept "Dapper Game", such as the app "Challenges to do with friends" that allows users to do challenges that involve going out on the streets and interacting with people, such as "Embrace the first passing through the street".

- The Dapper Game would likely become a trend, in which children lose interest after a while. As the concept "Marktkramen zijn speeltoestellen" entails playing equipment that can be used for numerous kinds of play, the replayability will likely be better.
- As Mustafa mentioned (section 6.2), the children already challenge each other. They might not need an app for this, such as in the concept "Dapper Game".
- The concept "Marktkramen zijn speeltoestellen" potentially answers the wish for physical playing equipment like soccer goals, a basketball hoop or a slide, that the children indicated (appendix B).
- The concept "Marktkramen zijn speeltoestellen" engages a wider group of users, which might make the Dapperplein more vibrant.

6.5 Conclusion

The four concepts that were presented in this chapter were evaluated by the children and municipality. By complementing this evaluation with my personal reasoning, it was decided that the concept "Marktkramen zijn speeltoestellen" is will be further developed.

Chapter 7
PHASE IV: PROTOTYPING, TESTING, OPTIMISING

Among the four concepts that were shared in the previous phase, the concept "Marktkramen zijn speeltoestellen" stoot out for its potential to offer children physical playing equipment at the Dapperplein. As part of this phase, the concept is prototyped and tested. The test took place during workshop 4, the set-up of which is explained at the right. The concept is optimised based on that test and personal ideation to become the design of "De Klimkramen" as will be described in the next chapter.
The questions that this phase answers and their sections are listed at the right.

● **Do the children see opportunities to perform physical activity and play with the concept "Marktkramen zijn speeltoestellen" during a test? (Section 7.1)**
Answered by testing a prototype of the concept with the children during workshop 4.

● **How would the children optimise the playing equipment / market stalls that are part of the concept "Marktkramen zijn speeltoestellen"? (Section 7.2)**
Answered by analysing the Lego playing equipment / market stalls that the children built as suggestions to optimise the concept, during workshop 4.

Workshop 4

Workshop 1	Workshop 2	Workshop 3	Workshop 4
Goal Getting to know one another, providing an introduction to designing and exploring the context and problem	*Goal* Checking whether the problem statement resonates with the children, and generating ideas	*Goal* Introducing the concepts, evaluating each concept, and iterating on concepts	*Goal* Testing and evaluating a (simple) prototype of the concept, and iterating on it

1 sessions with a total of 4 participants

Main activities during the workshop

Refreshing memory on the concept

The participating children were familiar with the concept since they were introduced to it during workshop 3. To refresh our memory, the concept was explained using a storyboard of its use. The storyboard consisted of photos of Lego, as can be seen in section 7.1.

Playing scenarios through interacting with the prototype

This activity investigates which opportunities for physical activity and play the children see in the concept. In order to do so, a prototype, being a scale model of the Dapperplein including the concept, is introduced. The children compose a Lego puppet that represent themselves in the prototype. They are then asked to show how they would interact with the market stalls as playing equipment. After this, I introduce scenarios (e.g. your best friend joins you at the Dapperplein, or you now have a ball to play with at the Dapperplein). The children explain by moving their Lego puppet through the prototype how they would react to the described scenario.

Iterating on the concept by prototyping new market stalls

The participating children suggest improvements to the market stalls that are part of this concept. They do this by each creating their own market stall made of Lego. By explaining the different aspects of their market stall, they notify me what is important to them in the concept.

7.1 Testing what opportunities the children see to perform physical activity and play with the concept

During workshop 4, it is tested whether the concept would stimulate physical activity and play of children at the Dapperplein. Since testing with a full sized prototype of the concept "Marktkramen zijn speeltoestellen" would be potentially dangerous as children could fall while testing, it is decided to test the concept with a scale model prototype made from Lego.

Approach
The prototype is shown in figure 26. Before testing, the children's memory is refreshed on what the concept entails using a storyboard, as shown in figure 28. This storyboard is also used to explain to the children what a scale model is. The children all compose a Lego puppet that represents them when interacting with the prototype, as shown in figure 25.

Results
While interacting with the prototype (shown in figure 27), the children pointed out various ways to perform physical activity and play with the concept. The children indicated that they would do the following activities:
- Climbing
- Jumping up and down the construction
- Using it as soccer goals
- With robe, creating climbing opportunity
- Balancing on the bars
- Running and climbing over a parkour

Figure 25: The children compose a Lego puppet to represent them in the prototype.

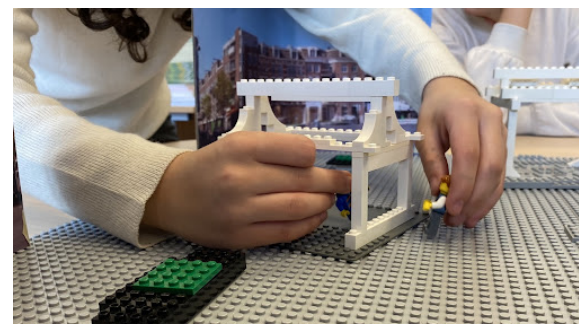Figure 26: A prototype of the concept "Marktkramen zijn speeltoestellen".

Figure 27: The children show in what ways they would use the concept's design, by moving their Lego puppet through the prototype.

STORYBOARD

1. De Dappermarkt.
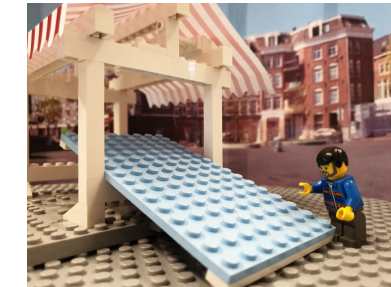
2. Cleaning up after the market. The market vendor takes the board with him.

3. He also takes the awning with him.

4. The cleaning team of the municipality cleans the sqaure.
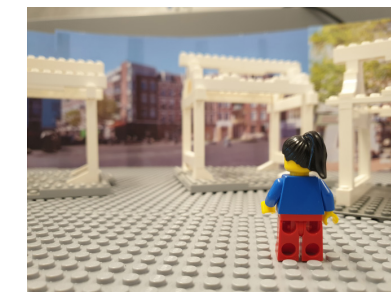
5. A child comes to the Dapperplein to play outside.

6. She meets more children to play with.
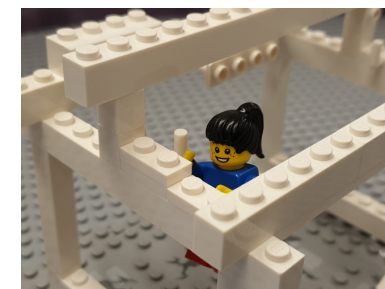
6. She meets more children to play with.

7. Time to go to bed.

8. In the morning the market vendor constructs his stall by attaching the board and awning.

Figure 28: A storyboard of the concept "Marktkramen zijn speeltoestellen".

7.2 Optimisation of the concept by the children

The children each built a playing equipment / market stall to suggest adjustments to optimise the concept of "Marktkramen zijn speeltoestellen", one example of which is shown in figure 29. The adjustments that the children suggested included:
- Climbing opportunity
- Hidden places
- A slide
- Platforms at different heights
- Colourful elements
- Offering a theatre stage

7.3 Conclusion

From the test with the prototype in workshop 4 can be concluded that the children see opportunities to perform physical activity and play with the concept "Marktkramen zijn speeltoestellen". The opportunities that they saw and their suggestions for adjustments to optimise the playing equipment / market stalls is taken as inspiration for the design that will be presented in the next chapter.

Figure 29: An example of a playing equipment / market stall, built by Naima.
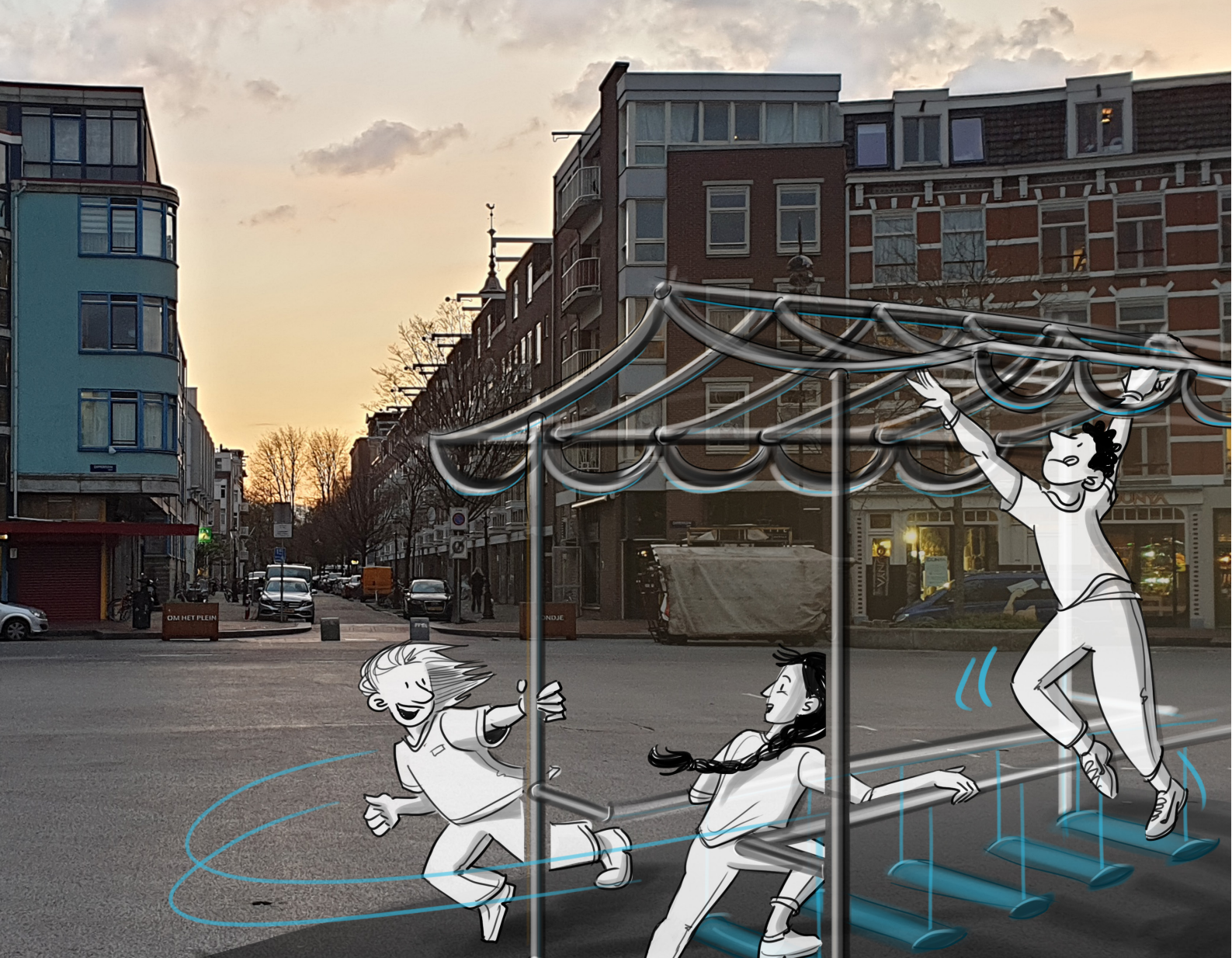
Chapter 8
"De Klimkramen"

This chapter describes "De Klimkramen", the design that derived from this project. As explained in previous chapters, this design is based on the concept "Marktkramen zijn speeltoestellen" that was introduced in phase III. This chapter provides a description of the design, and explains its value, before diving into what it looks like and its implementation.

8.1 Description

"De Klimkramen" are three types of playing equipment, installed at the Dapperplein, that during the day function as market stalls. Children of age 10 to 12 can use "De Klimkramen" to play, as well as younger children and residents that are up to doing physical activity.

The design creates a safe playing area. "De Klimkramen" form a physical barrier that blocks cars from crossing the Dapperplein. Also, with its wide range of regular users, the playing equipment creates a safer atmosphere at the Dapperplein, since there is an increased number of people that keep an eye out for one another.

Moreover, "De Klimkramen" create a sense of community, since the design is used in harmony with the market. As the design is used by both residents who want to do sports and play, as well as by market vendors, who need the construction of "De Klimkramen" to build their market stall, the two parties might learn about one another's perspective, which might create a feeling of togetherness. Moreover, a sense of community is stimulated because of the iconic value of "De Klimkramen". The Dappermarkt, for which the

Dapperplein is known, would be visible not only during the market itself, but also during the night, as the playing equipment is shaped like market stalls. Also, with the new ground plan for the Dappermarkt that the concept suggests, people will be more likely to use the Dapperplein as a square to stay instead of to pass by.

The transformation of "De Klimkramen" from playing equipment to functioning market stalls goes down in three different ways, based on the three types of playing equipment. The first playing equipment "De Panna-kraam", fits underneath a market stall. The second playing equipment "De Zwier-kraam" includes a construction to which only an awning and a board need to be attached, of which the awning needs to be secured using clips. Lastly, the playing equipment "De Mik-kraam" needs only the addition of a board to function as a market stall.

An overview of the design, including its stakeholders and cycle between functioning as playing equipment and functioning as market stalls, is shown in figure 30.

Offering opportunity for physical activity and play

- Playing equipment for children (10-12 years old, but also younger children)

Increasing the feeling of safety

- Creating a safe playing area by blocking cars from crossing the square
- Attracting a new audience, that helps to keep an eye out

Fostering a sense of community

- In harmony with the market
- Market vendors and children learn about one another's perspective
- Iconic for the Dapperplein
- The new ground plan of the Dappermarkt, makes the Dapperplein a square to stay

Playing!

Zzz...

CONSTRUCTION
1. Attach awning
2. Attach board

Displaying products

Residents keep an eye out for one another

Forming a physical barrier for traffic

Municipality

Market vendors

Sporty residents

Market stall builders

Children

Parents

Dappermarkt

CONSTRUCTION
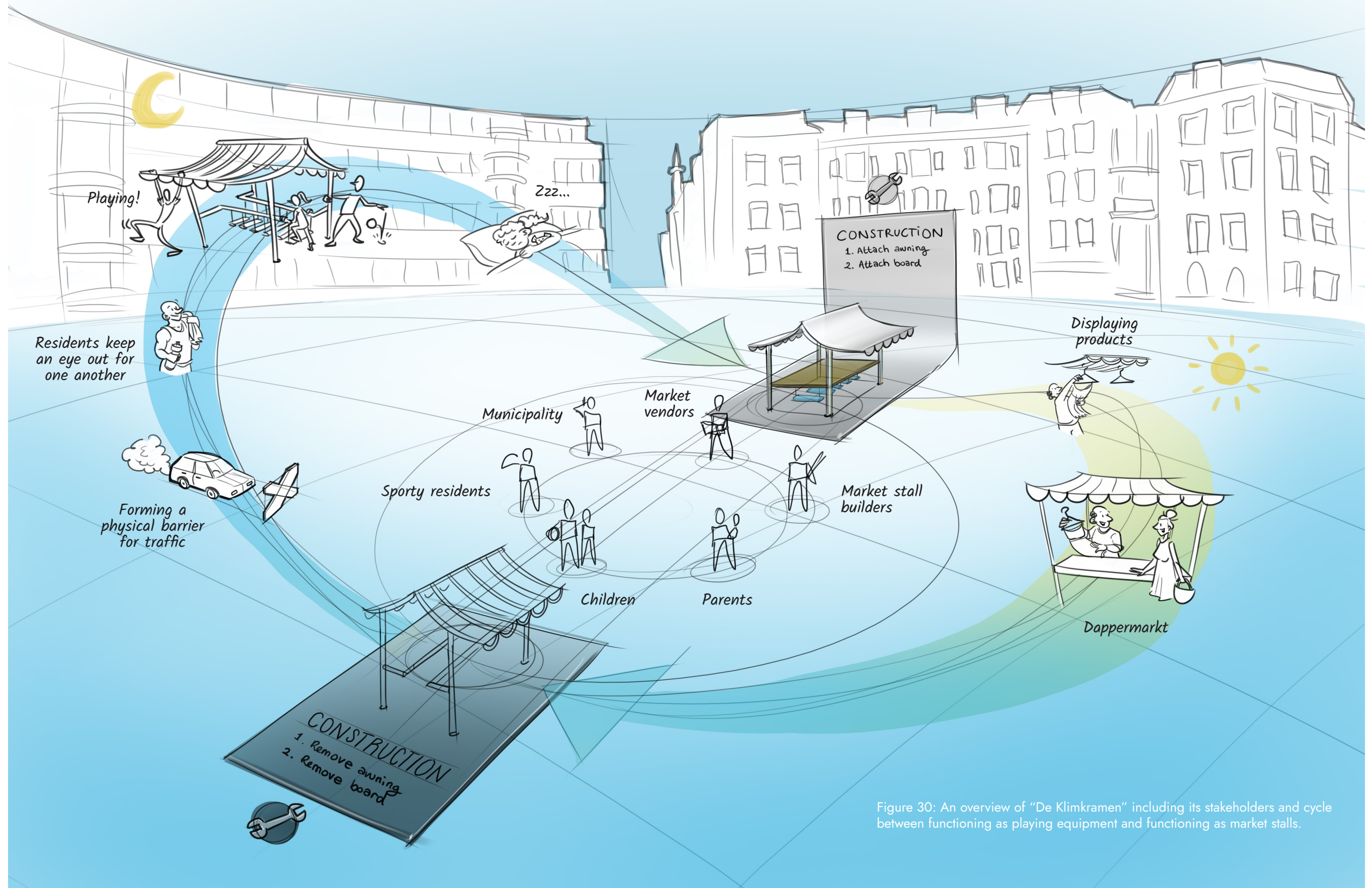1. Remove awning
2. Remove board

Figure 30: An overview of "De Klimkramen" including its stakeholders and cycle between functioning as playing equipment and functioning as market stalls.

8.2 What does it look like

The properties of the design are discussed in this section. First the three different "Klimkramen" are classified, whereafter the suggestion for a renewed ground plan of the Dappermarkt is explained.

Three types of playing equipment
"De Klimkramen" include three different types of playing equipment, as shown in figure 31.

Note how for the sake of ease of use, the market stall construction, board and awning are of standardised sizes (Marktkramen Huren, n.d.). In this way, the market stall builders can apply their usual equipment for the construction of "De Klimkramen" as market stalls.

Also note how "De Zwier-kraam" and "De Mik-kraam" include the safety measure of a crash mat. This is required by Dutch norm (norm NEN-EN 1176-1) since the fall height is higher than 60 centimetres. (Schokdempende bodem onder speeltoestellen, n.d.)

PLAYING EQUIPMENT
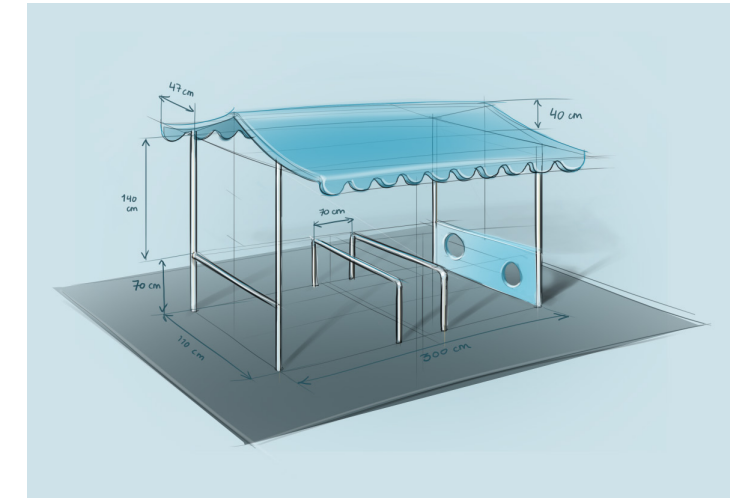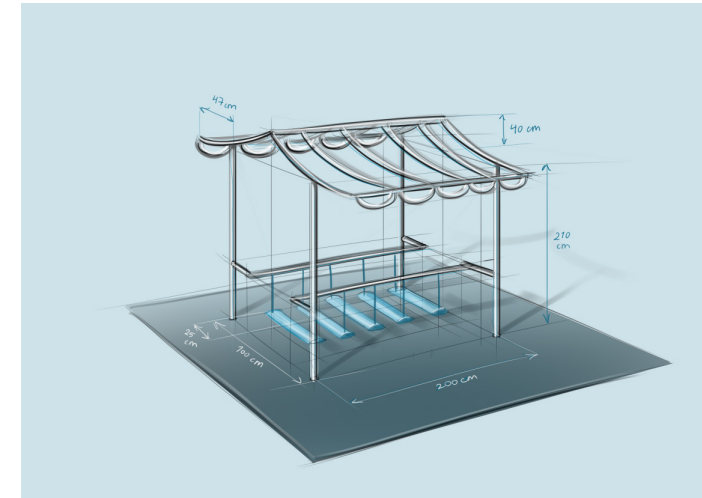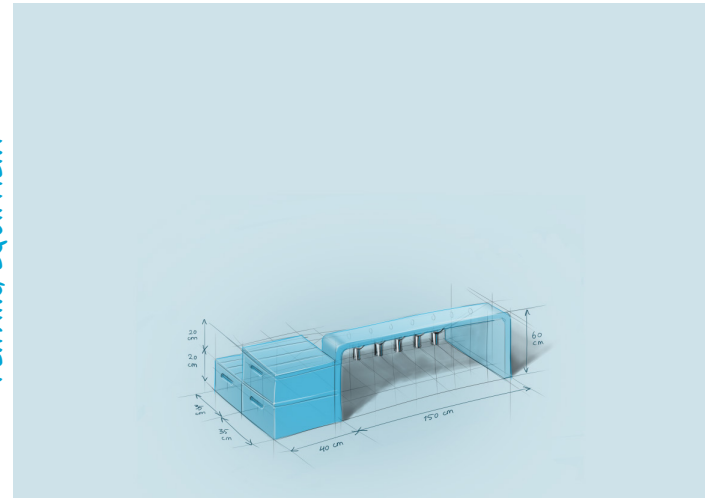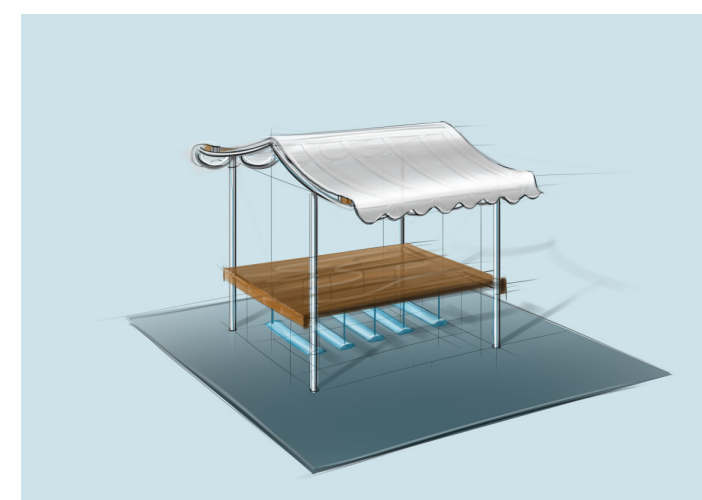
MARKET STALL

"De Panna-kraam"

Playing
- Soccer goal
- Steps

Using as market stall

The regular market stall construction fits around "De Panna-kraam".

"De Zwier-kraam"

- Wobbly bridge
- Monkey bars

An awning is attached using a clip that the market vendor brings.
The board fits on top of the two bars at the sides of "De Zwier-kraam".

"De Mik-kraam"

- Holes for aiming ball
- Horizontal and parralel bars

The board fits on top of the two bars at the sides of "De Mik-kraam".
The bar at the side of "De Mik-kraam" can be used to hang products on to display the offerings of the market stall.

Figure 31: The Three types of playing equipment.

A renewed ground plan for the Dappermarkt

This section explains the renewed ground plan for the Dappermarkt that is part of the design. As described, "De Klimkramen" block cars from crossing the Dapperplein and create a new routing for visitors of the Dappermarkt that nudge them to stay around at the Dapperplein instead of passing by. To establish this, a new ground plan of the Dappermarkt at the Dapperplein is proposed.
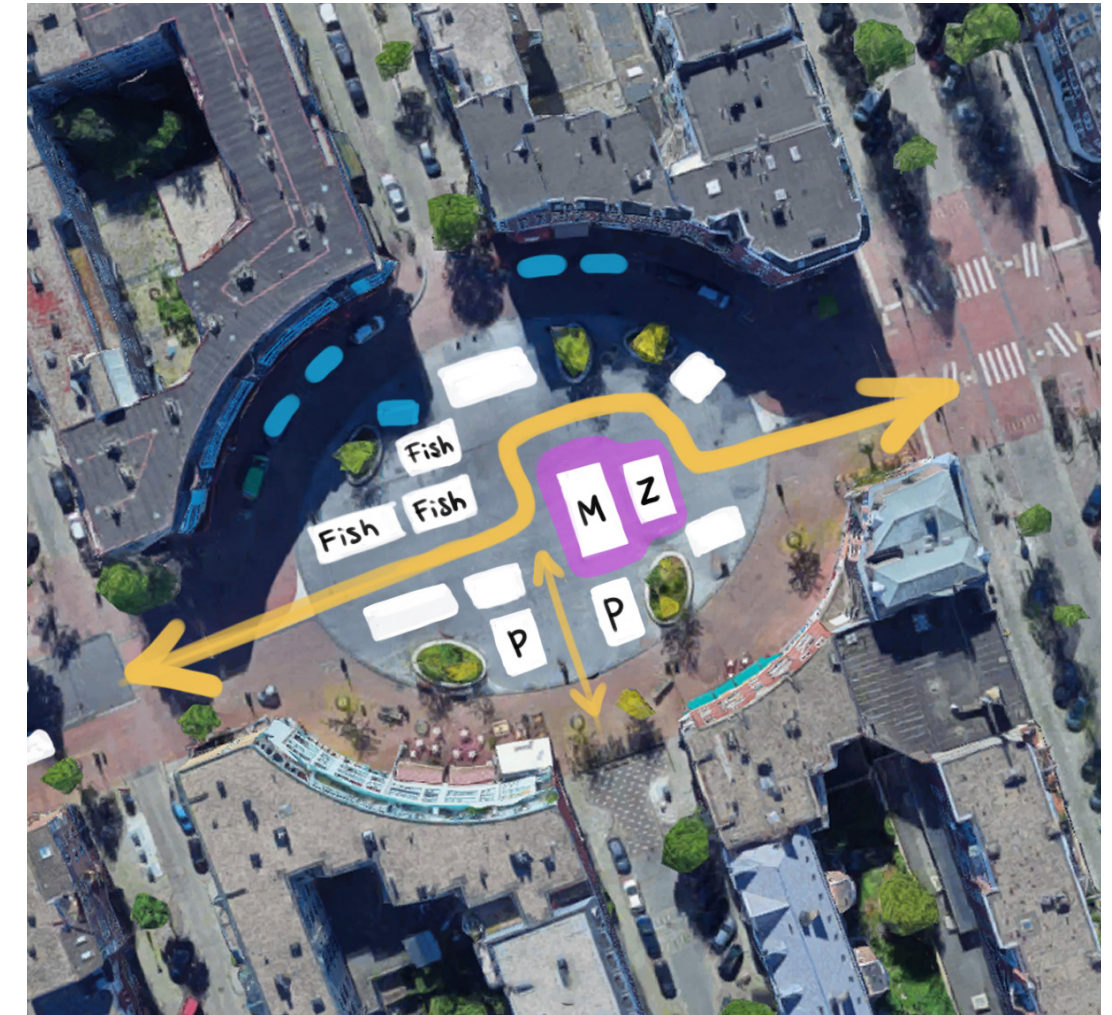
Figure 32 shows the current ground plan of the Dappermarkt at the Dapperplein, as well as the suggested ground plan as part of this design.
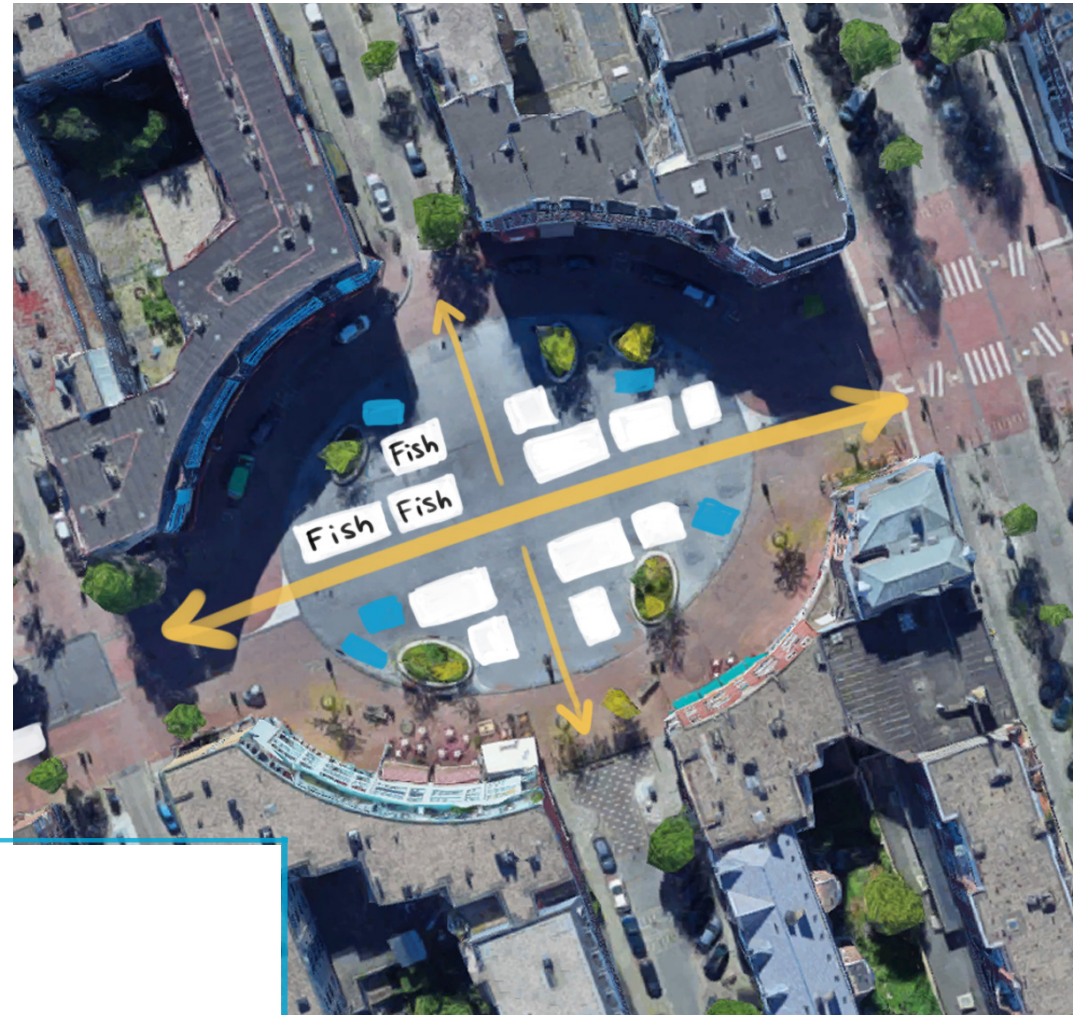
LEGENDA

☐	Market stalls
P	"Pana-kraam"
Z	"Zwier-kraam"
M	"Mik-kraam"
■	Crash mat
Fish	Fish stall
→	Walking path of Dappermarkt visitors
■	Cars of market vendors

- The market stalls leave space in the middle of the Dapperplein, where cars could pass.

- People that cross the Dapperplein walk in a straight line, which might stimulate them to just pass by.

- The cars of market vendors are placed directly behind their stalls.

- The fish stall is situated in the upper left corner.

- "De Zwier-kraam" and "De Mik-kraam" are placed centrally to form a physical barrier that blocks cars from crossing the Dapperplein.

- People who cross the Dapperplein walk in a curve that might nudge them to slow down and stay for a while at the Dapperplein.

- Some of the cars of market vendors are placed at the parking spaces that surround the Dapperplein to free up space at the square.

- Fish stall remains in the upper left corner since the fish stall has an arrangement with the municipality (as explained in section 4.3).

Figure 32: The current ground plan of the Dappermarkt at the Dapperplein compared to the proposed ground plan.

8.3 Implementation

Five steps are suggested to implement the design, as shown in figure 33.

Constant evaluation with stakeholders

Stakeholders are on board

Design built!

Hire a project manager

Research the market vendor's perspective & iterate on the design

Team up with an expert on playing equipment

Find partner(s) to embody, produce and place the design

Evaluate the effect of "De Klimkramen"

To start with, I recommend the section CAPHRI to hire someone to manage the proceeding of this project. A (industrial) designer could be suitable for the job, as (s)he will likely be able to bridge between different stakeholders.

As this project focussed primarily on the children's perspective, it could be wise to examine the market vendors' perspective, to ensure that the design is feasible and desirable in their view as well. A first step in doing so was taken within this project still, as can be read in the next chapter.

After this, I would recommend to team up with an expert on playing equipment in order to create a design confirm governmental safety measures.

As a next step of realisation of the design, I would recommend to find partner(s) that can take care of the embodiment, production and placing of the design, e.g. an agency that produces custom made playing equipment.

Lastly, it would be valuable to evaluate the use of the design once they are realised. In case "De Klimkramen" are a success, the design can be expanded to involve more stalls, or other market squares.
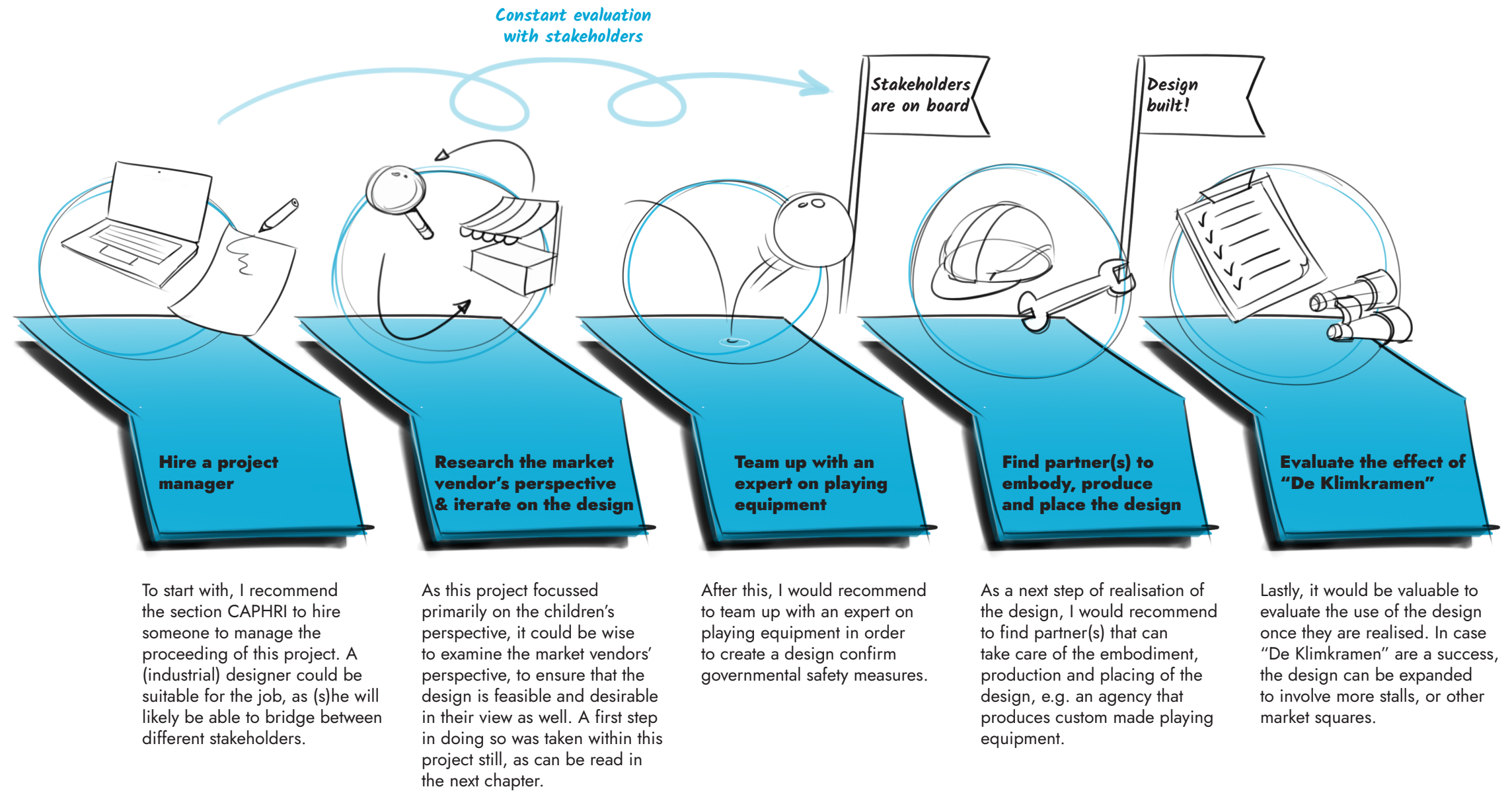
Figure 33: Suggested steps for implementation.

Chapter 9
EVALUATION

Thus far this project viewed the design challenge primarily from the perspective of the children at the Dapperplein. However in order to successfully implement the design of "De Klimkramen", other involved parties need to be on board as well. These parties consist of people that either are potential users of "De Klimkramen" (market vendors, market stall builders and residents) or parties that will not use the design themselves but will nevertheless have a say in the realisation of the design (the market manager, the fire brigade, and the local police(wo)men). This chapter describes how these parties evaluated the design of "De Klimkramen" in terms of feasibility and desirability.

9.1 Approach

In order to evaluate the design, semi-structured interviews were conducted with representatives of the involved parties, as shown in figure 34. The interviewees were asked to point out their considerations in terms of desirability and feasibility of the design. To conveniently explain the design, figure 30, 31, and 32 (shown in the previous chapter) were shown during the interviews.

Two local police men, representing the police

A market stall builder, representing market stall builders

A market vendor / board member of the central association of the itinerant trade, representing market vendors

The market manager, representing himself

Three local firemen, representing the fire brigade

Figure 34: The representatives of involved parties during the interviews.

9.2 Results and recommendations

Below the evaluation of "De Klimkramen" that resulted from the interviews is discussed. Furthermore, when applicable, recommendations for further development of the design are given.

Recognition of the necessity for change

To begin with, most interviewees indicated that they rarely see children playing outside, and all interviewees agreed on the urgency of addressing problems at the Dapperplein. They recognised themselves in the problem statement.

Making the Dapperplein more vibrant

Most interviewees mentioned how they would like to make an effort to make the Dapperplein more vibrant. As the police representatives explained, this could improve safety, as more people will be there to keep an eye out. The representative of the market vendors explains how this could also benefit market sellers and restaurants at the Dapperplein, as more customers will be drawn and might spend more time at their shops. Although the representatives of the fire brigade, market vendors, market manager, and market stall builders request changes to the design, all interviewees see the potential of "De Klimkramen" to make the Dapperplein more vibrant.

Potential creation of spot to hang out and consume alcohol

The representatives of the police, market vendors, market manager and market stall builders argue how the design might attract the wrong audience; it should not offer a new spot to hang out and consume alcohol. They think that "De Mik-kraam" might create such a spot, as it provides shelter from the rain. "You should not offer too much comfort during the evening and late night." explains a representative of the police.

Low durability and hygiene of crashmat

The representatives of the market vendors and the market manager are concerned that the crash mat below "De Zwier-kraam" and "De Mik-kraam" might cause trouble. As the market manager explains "This is not possible at the market. A market stall will be next to it. If that stall stands on the rubber… Besides, there will be cigarette butts on it, it will soon be very dirty." As the representative of the market vendors explains: "Let's say there will be a market vendor selling textiles. What will the crashmat be like with moist, ice or snow? When this would splashes (onto the products), the business of the textile vendor loses value."

Considering this feedback, it is recommended to either look into different options for materials of the crashmat to avoid the named disadvantages of the mat, or to adjust the design of "De Zwier-kraam" and the "De Mik-kraam" so they do not require a crash mat.

Conflict with needs market vendors

Besides the disadvantages of the crash mat, the representative of the market vendors points out more conflicts with the needs of market vendors. First of all, the renewed ground plan suggests that some of the market vendors park their car at the road surrounding the Dapperplein, instead of right behind the market stall as they are used to. The representative of the market vendors explains why changing this is an issue: "There are people who have their whole van topped off with textiles. They can not walk 30 metres while carrying that." Moreover, the renewed ground plan suggests a new route for visitors of the market. The representative of the market vendors explains how this is problematic as visitors will not find your stall anymore: "Even if you move just by one stall (…) people will ask you "where you on holidays?"" Besides, the market vendors currently use the space under the market stall for storage, which

would be blocked by the playing equipment in the design of "De Klimkramen".
Also, the representative of the market vendors explains how the vendors would lose the flexibility to adjust the set up of their stall, because of the stationary aspect of the design.
This evaluation shows how the perspective of the market vendors needs to be better represented in the design. As a next step, it is therefore recommended to find a way to involve the market vendors in the design process to enhance "De Klimkramen".

Accessible for fire brigade

The representatives of the fire brigade indicated that if a fire would occur at the Dapperplein during market hours, they would currently park at the centre of the square. Then if needed, they would put aside a market stall. With "De Klimkramen" this would not be an option anymore.
Therefore, to evaluate whether, with the addition of "De Klimkramen", the fire brigade could still reach all buildings that surround the Dapperplein, three fire men joined me at the Dapperplein to fit with the fire engine, as shown in figure 35.
Good news; As it turned out, the fire engine can drive on the street that surrounds the square. They can thereby access all buildings at the Dapperplein in case of emergency.

However, an issue could still be that, during the evening, the fire brigade commonly crosses the Dapperplein on their way to a fire on another location in the Dapperbuurt. "De Klimkramen" would block this passage way. However, as the fire men indicated, they expect that another passage way can be arranged.

9.3 Conclusion

The design of "De Klimkramen" was generally well received during an evaluation by potential users and parties that will have a say in the implementation of the design, although adjustments are needed to make the design a better fit with the needs of market vendors, to take hygiene and durability of the crash mat into account and to ensure that the design does not create a new spot for people to hang out and consume alcohol.

Figure 35: Testing whether the buildings surrounding the Dapperplein could still be reached by the fire brigade when "De Klimkramen" are implemented.

Chapter 10
DISCUSSION
& CONCLUSION

This chapter looks at the project and resulting design from a larger perspective. First, the project's overall process is summarised. Then, the spillover effects and scalability of the design are discussed. It is then considered what contributions the design brings to both stakeholders and the design field at large. Thereafter, the limitations of this project are discussed, and recommendations for future research and design.

10.1 Process summary

The goal of the project was to stimulate the physical activity of children at the Dapperplein. In order to reach this goal, we went through four phases that resulted in a design that was then evaluated. This section provides a short summary of this project's process, by walking through the four phases and evaluation.

Phase I: Exploring the context and problem
During the first phase of the project, the context and problem were explored through facilitation of workshop 1 at the Dapperschool. The children shared their view on the current situation of the Dapperplein and their preferences when it comes to playing outside. To complement the insights that were gained during workshop 1, expert interviews were conducted as well as a literature study and personal observations. The gained knowledge resulted in a problem statement, design goal and list of criteria and wishes for the design.

Phase II: Ideating and selecting
During the second phase of the project, the children and I ideated during workshop 2. Moreover, ideas were collected during expert interviews. The ideas were selected based on how well they potentially fit the design goal and how new and special they are. This resulted in four concept directions.

Phase III: Conceptualisation
During the third phase, the four concept directions were developed into concepts. These concepts were evaluated by the children, during workshop 3, and by the municipality. Through addition of my personal research on desirability, feasibility and usability, one concept was chosen for further development.

Phase IV: Prototyping, testing and optimising
The concept that was chosen for further development in phase III was prototyped during the fourth phase of the project. The children then tested and optimised the concept during workshop 4. Further optimisation through personal ideation resulted in the design of "De Klimkramen".

Evaluation
The design of "De Klimkramen" was evaluated on desirability and feasibility during meetings with representatives of residents, market vendors, market stall builders, the market manager, the police and the fire brigade. This revealed practical barriers that are up for further research during the development and implementation of "De Klimkramen".

10.2 Spillover effects and scalability

Spillover effects
The goal of this project was to stimulate physical activity of children at the Dapperplein. The design however, reaches a broader impact than just that, as is discussed in this section.

Safe and social atmosphere
As a spillover effect, the design stimulates a more safe and social atmosphere, as it attracts more people to the Dapperplein who can keep an eye out for one another and blocks cars from crossing the Dapperplein during the evening.

Improving neighbourhood image
As the design potentially makes the Dapperplein a more vibrant place, the neighbourhood might be improved. Besides, "De Klimkramen" might become iconic objects for the Dapperplein. This might make the Dapperplein a landmark that e.g. could become popular to include in city tours. This might attract tourism which would create more business opportunities for the market, restaurants, and shops at the Dapperplein and the Dapperbuurt at large.

The described spillover effects could be stronger when the concept is scaled up, the opportunities for which will be discussed next.

Scalability
This section considers the opportunities to scale up the concept.

Including more market stalls
The design suggests replacing four market stalls at the Dappermarkt with "De Klimkramen" (two times "De Panna-kraam", one "Zwier-kraam" and one "Mik-kraam"). However, eventually the remaining market stalls at the Dapperplein could also be turned into "Klimkramen", to create even more impact.

Expanding to different squares
The municipality of Amsterdam could consider implementing the design at other squares in Amsterdam that host a daily market, such as the Haarlemmerplein or the Anton de Komplein. The design of "De Klimkramen" might also be of interest to other municipalities that want to offer playing opportunities at a market square after market hours, in the Netherlands or abroad.

Including more functionalities
Moreover, new variations of "De Klimkramen" can be developed. These variations can include more ways to perform physical activity, but they could also offer functionalities that can be used for different purposes. For instance an object that by day functions as a market stall, can by night be a picnic table, or a stage for small concerts, theatre play and stand-up comedy.

Expanding the range of users
Considering these different functionalities that can be added to the design, it can also be imagined how it could reach a broader range of users. For instance, features can be added to the design that not only target children, but also adult residents or tourists.

Extend the range of time that the design can be used
Additionally, the design could be extended to include features that can be used to stimulate physical activity and play of children during market hours.

10.3 Contributions

Contributions to Amsterdam UMC
Since the department Child and Adolescent Public Health Research & Innovation, of the Amsterdam UMC commissioned this project, it is relevant to consider what this project contributed to them. First of all, the project contributed a design that stimulates physical activity of children at the Dapperplein, that the department can implement in collaboration with stakeholders.
Moreover, the project contributed insights that add to their research on health behaviour of children in Amsterdam. E.g. The overview of the context and problem of the Dapperplein as shared in phase I can be added to the research on context and problems in Amsterdam at large, or compared to different areas of the city as part of a case study.
Also, it could be of value for the department to learn from the project's approach. Possibly, there are aspects of the approach that might be beneficial to implement in similar ways in (future) projects that the department conducts. E.g. Working visually during brainstorming and to explain concepts to participating children, or structuring the workshops according to fit the design process as described in section 3.1. Also, as the department is making plans to implement the design, it might be of value that stakeholders were engaged during this project (during exploration of the context and problem, and during evaluation of the design). This might have sparked enthusiasm with the stakeholders, which could make realisation of the design easier.

Contributions to other stakeholders
The project created an understanding of the children's perspective of the situation at the Dapperplein which can be shared with decision makers. Children are not commonly involved in decision making of their physical environment themselves, neither is their point of view easily accessible for the decision makers. Besides providing a design to improve the situation at the Dapperplein, this project shares the children's point of view, which will be accessible for these decision makers.

Also, by being a neutral designer (not directly connected to any of the involved stakeholders), the stakeholders could speak openly with me, which enabled me to create an adequate understanding of the context. I for instance found out that some stakeholders hold biases towards other stakeholders, e.g. the market vendors are considered not to cooperate or the municipality is considered not to make any progress. However, through talking with various stakeholders on a neutral base, I was able to identify the reasoning of different stakeholders for their actions, and found that there is a lot of common ground, as all stakeholders that I talked to in this project recognised the identified problems and were interested to make a change in order to create a healthy environment for children at the Dapperplein.
Through engaging this variety of stakeholders on neutral grounds, this project potentially made a contribution to them by making a design that fits their various needs and wishes.

Contributions to the design field
This project reflects on the method of co-creation with children, in chapter 11, which also includes concrete tips for those who (will) do co-creation with children. In addition, the project itself represents an in-depth case study on applying co-creation with children, which might be used in methodological study of researchers of design practice.

10.4 Limitations & recommendations

In addition to the proposed steps to implement the design (section 8.3), this section provides recommendations that result from the project's limitations.

Testing the interaction

First and foremost, the evaluation of the design was limited because its interaction was not tested. As the interactions that needed to be tested would include e.g. attaching a board and awning to the construction of "De Klimkramen" or play with "De Klimkramen" where children would need to climb in the construction, creating a full scale prototype that is safe to test was not feasible within this project.

As an alternative to testing the children's interaction with the design, it is recommended to involve a designer that is specialised in playing equipment. This designer could likely make an accurate indication of what the children might enjoy playing with.

To test the market vendors' interaction with the design, it is advised to create a full scale prototype that can be tested in a safe manner.

Investigating the summative impact

The design consists of different aspects (e.g. the choice for the three types of "Klimkramen", or their placement) that each have their separate effect. These separate effects would add up to a summative impact, which is assumed to be the described values (offering opportunities for physical activity and play, increasing safety and fostering a sense of community). However, in this project this is not validated. Therefore I recommend investing time to investigate this.

Examining the long-term impact

The long-term impact of the project is hard to evaluate, because you would have to follow it for a longer period of time. The expected long term effects are as described under section 8.1 (description of "De Klimkramen") and section 10.2 (description of the spillover effects). These effects would be desirable. However, there might be

unforeseen events or effects that have a negative impact, e.g. the next generation of children at the Dapperplein might turn out not to be interested in "De Klimkramen".

Even though the long-term impact can not be fully predicted before implementation, I recommend doing case studies of implementation and long term impact of similar designs to make an indication. Besides, I recommend, after implementation of the design, to monitor the project over a longer period of time, e.g. by doing interviews, to determine whether the design makes a positive impact in the long run.

Minimising the selection bias

The project based its insights and design largely on input of individuals that represented certain stakeholder groups. It needs to be considered whether these individuals were representative for their respective groups and what the effect of selecting them was.

Firstly, thirteen children of the sixth grade of the Dapperschool participated in the workshops. They were selected based on which children volunteered to participate. This selection procedure could be biassed as it possibly selected the more outspoken children, whereas more shy children maybe did not sign up. Besides, it could be that children at the Dapperschool are not entirely representative for children living near the Dapperplein. To research whether the selection bias influenced the project's outcomes, I would recommend having control groups, where the same process is conducted with different children that live near the Dapperplein.

Furthermore, it could be that, in evaluation of the design, the representatives for stakeholders would have a say in the implementation of the design, were not representative for the people that in the end will make the decisions about implementation of the design. To investigate this, I would recommend to record in the decision making process. It could then be tracked whether the same

arguments are given to (not) implement the design. In that way you will learn how representative the opinions voiced by the representatives were. It can then be decided if in future projects different representatives should be consulted.

Another limitation of selection of representatives in the project was that it was not possible to talk to the market vendors at the Dappermarkt directly. The market manager, market stall builder and market vendor / board member of the central association of the itinerant trade strongly advised me not to do so. They indicated that since the Corona pandemic the market vendors are experiencing difficulties with their businesses. They argued that this resulted in the market vendors often reacting tensely to suggestions for change to the Dappermarkt. It was therefore decided to follow their advice to not do interviews with the market vendors, to avoid conflict. Also, it was decided not to do street interviews with residents as the word might spread and the news of the design might reach the market vendors after all. Interviews were therefore conducted with a market vendor / board member of the central association of the itinerant trade, as a representative of the market vendors, and with parents at the Dapperschool, as representatives of residents. Since the market vendors are an important stakeholder in the design, as well as one of the main user groups, I recommend for further

development of the design to find a way to gather more input of market vendors at the Dapperplein, and to talk to a wider range of residents.

Considering the personal influence on the process

Another limitation of the project could have been my personal influence on the process. It could be that if another designer would conduct a similar project, the outcomes would be different. It could be that personality traits influenced the children during the workshops (e.g. I am quite well structured, it could be that a designer of a more playful nature would have different outcomes of a workshop). I also noticed how the children when ideating were often influenced by an icebreaker activity that we did just before (e.g. as an icebreaker we did a game of Twister, and suddenly a lot of Twister related ideas popped up during the next brainstorm). It could be that another designer, choosing other options for activities such as the icebreakers, would have different results for the project. If one would like to avoid this limitation, I would recommend having a control group where another designer conducts a similar project.

10.5 Conclusion

This project explored the main research question: *How can sustainably healthier behaviour be stimulated for youth living in Amsterdam, by designing (a) way(s) for the Dapperplein in Amsterdam to be more inviting towards the neighbourhood's youth to perform physical activity after closing hours of the Dappermarkt?*
The answer of this question was found in the design of "De Klimkramen", which stimulates physical activity of children at the Dapperplein. The design entails three types of playing equipment, that by addition of an awning and board, function as market stalls during the day. Besides offering playing opportunities, the design creates a safe playing area, as "De Klimkramen" form a physical barrier that blocks traffic from crossing the Dapperplein, as well as attracting more residents to the square during the evening, that then can keep an eye out. Moreover, "De Klimkramen" stimulate a sense of community, as it could become an iconic landmark for the Dapperplein, and since both children and market vendors use "De Klimkramen" they might learn about one another's perspective, which might create a feeling of togetherness. Lastly, the Dapperplein might become more vibrant as its ground plan is adjusted to nudge people to stay at the square instead of to pass by.

This final result addresses the design goal:
I want children of 10 to 12 years old living in the Dapperbuurt to be able to perform physical activity through playing outside at the Dapperplein daily after the market is cleared in a safe and comfortable way, by adding stimuli for play and improving safety at the Dapperplein, through co-creation with children of the Dapperschool.

The design of "De Klimkramen" was generally well received during an evaluation by potential users and parties that will have a say in the implementation of the design, although adjustments are needed to make the design a better fit with the needs of market vendors, to take hygiene and durability of the crash mat into account and to ensure that the design does not create a new spot for people to hang out and consume alcohol. Besides addressing the design goal, the design also has spillover effects, such as creation of a safe and social atmosphere and improvement to the neighbourhood image.

This project can be seen as an in-depth case study of applying co-creation with children to design for stimulation of children's physical activity. The project contributes to the design field, as it reflects on the method, and provides recommendations for designers who (will) do co-creation with children, as can be read in the next chapter.

In conclusion, this project contributed a design that stimulates physical activity of children at the Dapperplein that the department *Child and Adolescent Public Health Research & Innovation* can implement in collaboration with stakeholders. Moreover, the project contributes to the department's research on health behaviour of children in Amsterdam, as well as providing an insight in the children's perspective that can be considered by decision makers on the public environment.
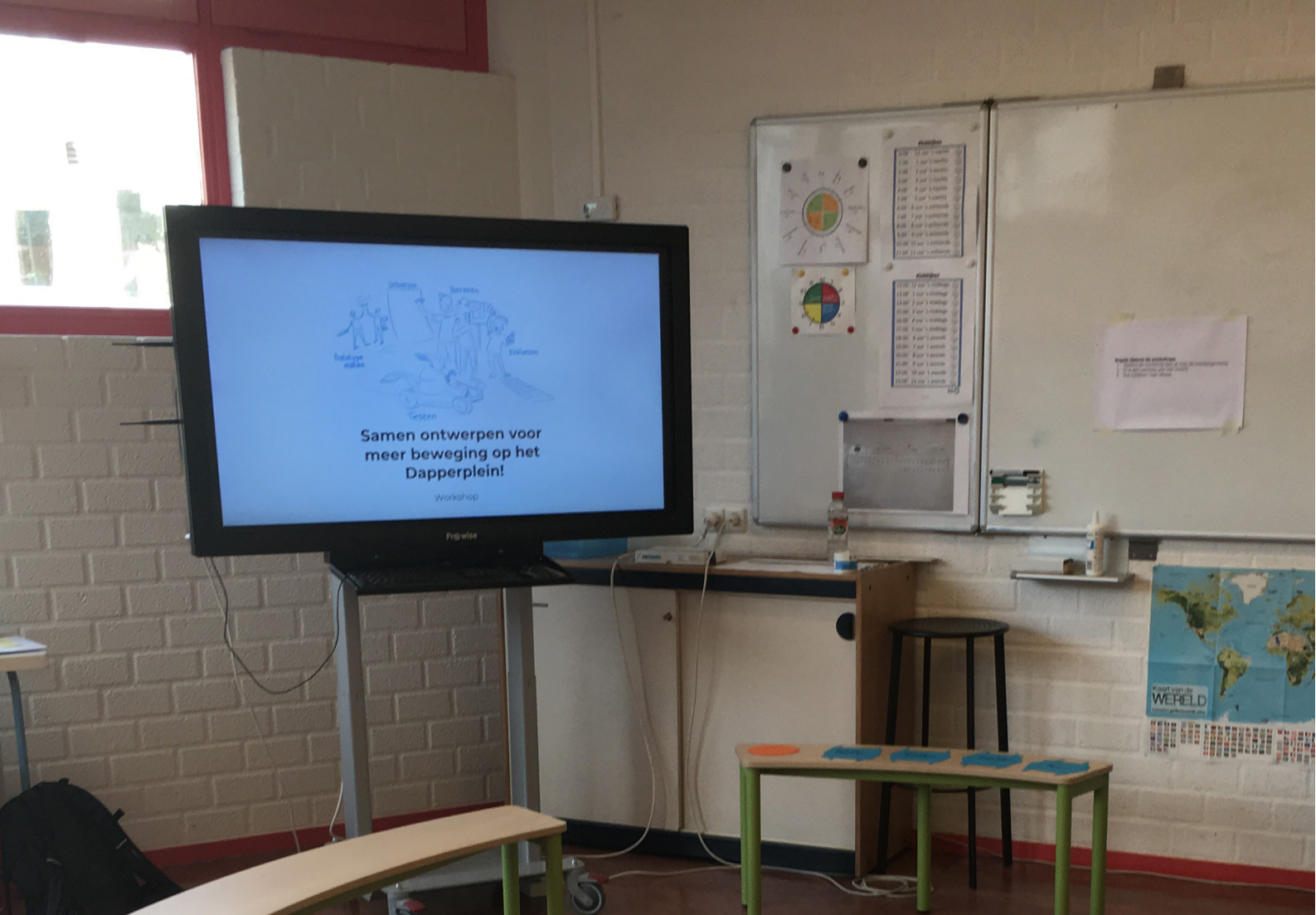
Chapter 11
REFLECTION AND RECOMMENDATIONS ON THE METHOD

In this chapter, I reflect on the application of the method and contribute to the design field, with recommendations for those who (will) do co-creation with children. First, aspects that influenced the effectiveness of the method are discussed, before discussing the social considerations of co-creation with children.

11.1 Aspects that influenced the effectiveness of co-creation with children

Aspects that influenced the interplay

As explained in section 3.1, the interplay in ideation fosters a fruitful co-creation process, and consists of the "Feedback loop" and the "Dynamic in ideation". The success of the interplay shows in the amount to which the participating children feel ownership over the final design. As it turned out during workshop 4, only 1 out of 4 children indicated to feel ownership over the design. We may conclude that the interplay was not as successful as intended. This section discusses aspects that influenced the interplay.

Aspects that influenced both the "Feedback loop" and the "Dynamic in ideation"

Firstly, the interplay was hindered due to the intervals between the workshops that for some of the participating children could reach up to 2 months.

Besides, it was intended to divide the children in a group A and group B, that would switch turns for every other session. In practice however, these groups soon mixed, as the availability of each child fluctuated. This made it hard to refer back to specific knowledge and/or ideas that were discussed during the previous workshop.

An aspect that favoured the interplay was that children that had missed a session were able to join the other group (A or B), and thus could remain engaged in the co-creation process. Also, for whom it was not their turn to join the workshop often took their chance to have a quick talk with me, sometimes on the topic of the Dapperplein, which fostered the interplay.

Moreover, the difficulty to have a plenary discussion during the workshops hindered the interplay. This was due to a lack of focus and order during most workshops. I had to limit plenary discussions to what was necessary to conduct the workshops (e.g. explaining an activity). This made it difficult to find resonance as a group, since

sharing ideas and opinions was hard. Because of this, creating a common vision on our knowledge and ideas was difficult.

Aspects that specifically influenced the "Feedback loop"

Doing the "Feedback loop" was difficult, since the children rarely answered the question "are my interpretations of your knowledge correct?" with a yes or no. Instead they took it as an invitation to share more of their stories (knowledge) that were vaguely related to the topic. In this way I did not end up with a clear result of the "Feedback loop", but instead ended up with an addition of more knowledge. Meanwhile I had invested some of the children's sparce time and concentration on the attempt to do the "Feedback loop".

Aspects that specifically influenced the "Dynamic in ideation"

Firstly, in my role as an authority (as "Juf Luna", name for a teacher in Dutch) the children often took my ideas and suggestions too literally. If I presented iterations on their ideas, I would nudge them in a certain direction since it would show my preference for a selection of their ideas. This harmed the "Dynamic in ideation", as it made the ideas of the children less authentic. I was therefore held back in sharing iterations.

Furthermore, the children did not always have all the knowledge that was needed to oversee the context of the design. The design goal that resulted from phase I turned out to be geared towards creating a feeling of safety at the Dapperplein. This is something that the children are no experts on. This might have made it more difficult for the children to come up with fitting ideas. This poses the question whether a co-creation process is more fruitful when knowledge on topics connected to the design challenge is provided during the workshops (e.g. through inviting experts or stakeholders to join the workshop).

Moreover, during the first sessions of the workshop

that was focused on ideation, it was hard to stimulate the children to think beyond the obvious, as will be explained in figure 37. There were thereby few ideas collected to iterate on outside of the workshops.

Lastly, the competitive attitude of the children made the "Dynamic in ideation" more difficult to conduct. When I would explain to them which ideas I iterated on, the children paid little attention to the content of the iterations, because they were distracted by observing whether I picked their idea, or someone else's. I therefore adapted and described the ideas that led up to iterations more abstractly (e.g. instead of explaining which specific ideas led to a concept, I would explain what underlying value of the ideas of the children inspired me). This made the "Dynamic in ideation" less effective.

The effect of the roles of the designer and participants that deviate from those in regular co-creation

In my experience in co-creation with employees of a company, the designer acts as the "fresh wind" that brings playfulness to the discussion, a new perspective and (often silly) ideas. The employees of the company are then the experts on the context and the boundaries of the design, and are asked to look at the design challenge from this new perspective. In co-creation with children however, these roles are inverted: the children are the "fresh wind", while the designer needs to indicate the boundaries of the design.

As an effect, where a designer would commonly bring in silly ideas to stir up a brainstorm (e.g. "why don't solve the problem by building a rocket!"), this works out differently in co-creation with children. The children, knowing that you as the designer have the best overview of the design's requirements, would be likely to react with: "Wow! Can we really build that?".

The effect of the power difference between the children and the designer

As explained in section 3.1, a designer commonly makes an effort to create a feeling of being equals among the participants and him/herself. This is needed to create a space in which everyone can freely share ideas and opinions, leading to a fruitful co-creation. In co-creation with children however, the designer is as the adult is an authority, exhibited for instance by keeping order during the workshops. This could have limited the ideation, because children might not have felt entirely free to share their opinions and ideas.

The effectiveness of different activities during the workshops

Figure 37 shows the different activities that were part of the workshops. Each activity's purpose is described, before indicating what observations were made on the effectiveness of the activity. To conclude, based on each activity, recommendations are provided for those who (will) do co-creation with children.

Purpose and type of activity	Activity during the workshop	Observations during the activity	Recommendations
Workshop 1			
Exploring the context and problem 7 children participated at a time Individual activity, the result of which is shared with the group	The children wrote their experiences with the Dapperplein on post-its and sheets of paper, and attached them to a poster while telling me about what they wrote down.	The children were eager to tell their stories and to discuss with other children whether their stories matched up or not. While doing so, they pointed at the poster to indicate what aspect of the Dapperplein they were talking about.	I recommend bringing a visual representation of the topic that you want to discuss (in this case the poster), and providing different modes of working for the children (writing or discussing)
Exploring the context and problem 7 children participated at a time. Individual activity	The children chose a picture of a playground in the Dapperbuurt and wrote on a template their experience with the playground and drew suggestions to improve it. I walked around to ask the children about their experiences.	In the first session, the children were done very soon. They got bored and started messing around. The next session I added a more challenging exercise (to come up with an improvement). As an effect the children were more focussed.	I recommend making the exercises challenging to get the children to think (leading to more valuable results) and to keep them busy (leading to a nicer atmosphere).
Exploring the context and problem 7 children participated at a time. Group activity	During the activity of "Kies je vak", inspired by Your Turn, a stripe was drawn on the ground, creating two sides. I read contradictions, e.g. "Playing inside vs playing outside". The children walked to the side of their preference. One of the children interviewed them about their choice. (Werkvormen voor Your Turn, n.d.)	Even though most of the contradictions were related to the design challenge, the discussions that the activity sparked were not. This might be because I introduced it as a game, or because the children were less concentrated at that moment.	This exercise holds the opportunity to have fruitful discussions with the children in a playful way. I would recommend doing this activity at a moment when the children are concentrated, e.g. as an ice-breaker at the start of a workshop.
Workshop 2			
Testing whether the knowledge shared by the children in workshop 1 was well understood ("member check") 7 children participated at a time Group activity	I asked the children what experiences and problems at the Dapperplein they remember discussing during workshop 1.	I expected to have a group discussion. However, Naima was quick to raise her hand and summed up the problem statement (as I had understood it as well) in one go. The other children just nodded when I asked them whether they were agreeing.	I would recommend doing the member check during an individual activity to ensure that you receive input from all children.

Figure 37: An overview of the effectiveness of different activities during the workshops

Purpose and type of activity	Activity during the workshop	Observations during the activity	Recommendations
Converging: Prioritising different aspects of the problem statement 5 children participated at a time. Group activity	The children were asked to order aspects of the problem statement (written on pieces of paper) on a scale. First, the scale was "Not important to very important". Then "Not inspiring to very inspiring". Lastly, the scale was "Mwah… to we want to tackle this problem!"	When a child was considering the aspects, (s)he ended up either thinking all was important, or nothing was important. Besides, a group discussion was difficult as the children saw it as a game to mess up the order when another child was arranging the aspects.	I see potential in this activity, I therefore recommend doing it if you have a very small group of children, or children that are especially concentrated. Another variant that I would recommend trying would be to compare two aspects at a time.
Warming up for ideation, showing that contributing silly ideas is alright 7 children participated at a time. Group activity	We passed a roll of tape around. When receiving it the person answers the question: "It can be used as a roll of tape, but what else can it be?".	It was good to practise coming up with silly ideas on an unrelated topic (roll of tape), as they felt free to share silly ideas. It however seemed disconnected from the follow up brainstorm, which made it harder for the children to maintain the free state of mind.	I recommend doing a similar warming up group activity where you brainstorm for (silly) solutions on an unrelated problem (instead of brainstorming for different uses of an unrelated object).
Braindump (meaning to get initial ideas on paper) 7 children participated at a time. Individual activity	During the "Door-geef" brainstorm, each child received a paper with a question related to the design challenge on top. During three minutes they were asked to come up with as many ideas to answer the question as possible. After this, they passed it on to the child next to them.	Most children had trouble coming up with ideas. The collected ideas were modest. Despite the warming up, the children did not share many silly ideas.	I would recommend spending time to create a safe space where children feel free to share silly ideas. Also, I recommend preparing triggering questions to ask when children get stuck.
Diverging: ideation 3 children participated at a time. Group activity	The aspects of the problem statement that resulted to be on the "We want to tackle this problem" side of the scale in the earlier exercise, were taken to a large sheet of paper on the wall to brainstorm on solutions. I assisted the children by drawing some of their ideas.	As we were collectively drawing and writing down ideas, I was able to spot it when a child would get stuck, and able to ask some questions to get the child going again.	A group activity has the advantage that it is easier to spot it when a child is getting stuck and help the child to get going again. I recommend switching up individual activities and group activities.

Purpose and type of activity	Activity during the workshop	Observations during the activity	Recommendations
Diverging: ideation 3 children participated at a time. Individual activity	During the "Random stimulus brainstorm" we took an aspect of the problem statement. each child received an unrelated picture. Once (s)he drew an idea inspired by it, (s)he received the next picture. Inspired on "plaatjesbrainstorm" of Your Turn (Werkvormen voor Your Turn, n.d.).	The children enjoyed this exercise. The instructions were clear to them. They got competitive to finish as many pictures as possible, which resulted in a fun and fruitful ideation.	I definitely recommend doing this activity as part of ideation.
Diverging: ideation 7 children participated at a time. Group activity	During the "Combineer-Fantaseer brainstorm" parts of the Dapperplein (e.g. the tree basins) are imagined to have a property (e.g. floating), which creates a surreal scenario in which the children are challenged to think of things that could happen in that scenario. Inspired on Your Turn (Werkvormen voor Your Turn, n.d.)	This activity confused the children, and thereby barely sparked ideas. Even though I understood the exercise, I had not done a pilot, and therefore was not prepared to explain it in detail, or to ask triggering questions when children got stuck.	I recommend testing an activity during a pilot before applying it during a workshop.
Diverging: ideation 3 children participated at a time. Group activity	During the "Problems are opportunities brainstorm", an aspect of the problem was selected (e.g. people hang out and consume alcohol). The children then came up with ways to use this issue as part of sports and play (e.g. the people can be obstacles for a parcour).	This worked very well for the children to come up with novel and "silly" ideas, without losing grip on the problem statement, as the problems were inherently involved in the solution.	I definitely recommend applying this activity, especially when you notice that children tend to lose grip of the context when they are thinking of "silly" ideas.
Converging: Selecting 3 children participated at a time. Individual activity	Each child marked his/her top 3 ideas, using three stickers. Then another three stickers were provided to them to mark good ideas that are specifically not their own.	Each child ended up putting the first three stickers on their own ideas. This makes me wonder whether the children really thought their ideas were best, or whether they did not look at the other children's ideas.	I recommend doing this activity, but before you start, ask each child to briefly present his/her ideas to make sure that the children have an overview of all ideas before they choose their favourites.

Purpose and type of activity	Activity during the workshop	Observations during the activity	Recommendations
Converging: Selecting ideas and resulting in concept directions No children participated. Group activity	The ideas that were selected through the previous activity, were one by one placed on a plot (x-axis: how well does it fit the design goal. Y-axis: How special & novel is the idea). Ideas that end up in the quadrant that is both fitting the design goal, and special & novel, are grouped to form concept directions. Inspired by Your Turn (Werkvormen voor Your Turn, n.d.)	This activity was planned at the end of the workshop. Unfortunately, the children did not have concentration left for it.	I recommend planning this activity at a point during the workshop where the children are still energised.
Workshop 3			
Evaluating four concepts 3 children participated at a time Group activity	I explained the concepts using drawings. The children were then asked to take a minute for themselves to write plus and minus points down. Whereafter they shared what they wrote down with the group.	It was difficult to collect their opinions. The children did not write down anything, and when sharing, the next child to share would often say "what he said" pointing at the previous child.	I would recommend finding a more playful way to evaluate the concepts, in order to engage the children more. E.g. by making teams that each represent a concept, then asking each team to argue why their concept should be further developed.
Iterating on a concept, divergent ideation 3 children participated at a time Group activity	The children chose a concept that speaks to them most and thought of iterations on that concept on a large sheet of paper on the table.	Some children were thinking for themselves and drawing only on their piece of the sheet, while other children were discussing with one another while drawing together at the centre of attention. A wide variety of ideas was collected.	I recommend offering different modes of working in an activity, e.g. individually or collectively, or fast and slow-paced. This helps to keep every child engaged.
Converging: Defining a concept 3 children participated at a time Group activity	Together the children and I drew a scenario of the use of the concept including the iterations that they came up with, on a large sheet of paper.	This activity had a nice dynamic. Some children joined me drawing the scenario, while others were posing ideas of how the story should evolve.	I recommend drawing a scenario together with the children, it helps for them to imagine what the design would be like, and offers different modes of working.

Purpose and type of activity	Activity during the workshop	Observations during the activity	Recommendations
Workshop 4			
Evaluating the design 4 children participated at a time Group activity	The criteria and wishes for the design were turned into statements (e.g. the design offers opportunity to perform physical activity and play). The children were asked to what extent they (dis)agreed on the statement.	The intended discussion about the statements was constantly disrupted because of distractions. Some of the children indicated their personal opinion, but not all opinions were collected.	I recommend finding a different way to evaluate the design, e.g. by reading the statement and asking them to hold up a green piece of paper when they agree, and a red piece of paper if they disagree.
Testing the design 3 children participated at a time. Group activity	By moving a Lego puppet through a Lego scale model of the design, the children explained how they would do sports and play with the design. I gave them different scenarios to play out, e.g. your best friend joins you at the Dapperplein.	The children enjoyed choosing a Lego puppet to represent them in the scale model, and showing me in what ways they would interact with the design. Posing different scenarios worked well to each time set a scene that made the children think of new possibilities for interaction with the design.	In case of difficulty of creating a full sized prototype, I recommend building a Lego scale model, as it works to the children's imagination and they can explain to you how they would use the design in real life.
Optimising the design 3 children participated at a time Individual activity	The children suggested improvements to the market stalls that are part of this concept, and built their ideas with Lego.	The different Lego parts that were available to them provided a random stimulus to the children that helped them to think of attributes of their own market stalls. They were very creative, and were eager to give me a tour through their creations.	Lego provides the opportunity to come up with ideas and build simultaneously. I recommend using it in ideation. Applying it sooner in a project could have fruitful results as well.

11.2 Considerations in social dynamics of co-creation with children

Besides reflecting on the effectiveness of the method, there are social aspects to consider, as this section describes.

Ethical aspects that need to be considered when doing co-creation with children

When doing co-creation with children, one should consider the ethical concerns, as (when handled incorrectly) a participating child can experience disappointment and/or develop a negative mindset towards the neighbourhood and/or initiatives. This section describes these risks and suggests ways to minimise them.

The risk of developing a negative mindset towards their environment

In a co-creative process there is a risk for the children to develop a negative mindset towards their direct environment. A design process starts with gathering insight in the context of the design and coming up with a problem statement of what the design should improve. In a co-creation process the participants of the design process are part of the target group of the design. For them, gathering insight in the context of the design and coming up with a problem statement means to become more aware of their direct environment and (as a problem statement) to conclude with things they would like to see differently in that direct environment. This inevitably leads to a negative mindset about the status quo of their direct environment, as visualised in figure 38. (A. Ogaeri, personal communication, September 14, 2021) (I. Pieper, personal communication, June 18, 2021) (H. Emke, personal communication, September 14, 2021)

The risk of disappointment and developing a negative attitude towards initiatives

Disappointment for the children is at risk since the process of realising a design takes a long time and not every design can be realised if multiple designs are made. Therefore the result will likely not be realised within a timeframe where the participating children can use the design themselves. On top of this, it could be that, even if the design fits the numerous requirements that are dictated e.g. by involved stakeholders or budget, the design still turns out not to be viable. In that case the children would never see the result of their work and possibly experience disappointment

The user experiences this problem.

Researching context

Designer

Context

User

Regular design process

I experience this problem.

Context

Researching context

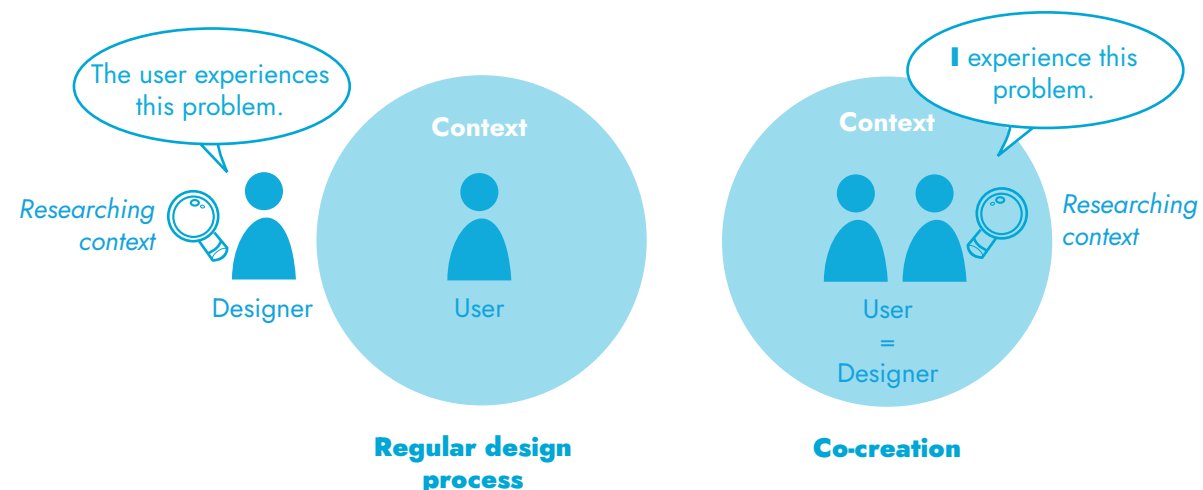User = Designer

Co-creation

Figure 38: The risk of development of a negative mindset about one's own direct environment due to participation in a co-creation process.

and feel demotivated to participate in similar projects in the future.

I experienced this first hand during the workshops, as some of the children participated in previous co-creation projects in collaboration with the municipality. The following quote shows how Youssef lost his faith in collaborating with the municipality.

> "I waited for three years now. I joined the workshops of this previous project as well, but my idea was never made. The municipality told me; we can do this for you, but after three years of waiting nothing happened. The municipality is just weird."
> - Youssef

Other children showed a similar sentiment. Fortunately, there are guidelines to minimise the risks that are involved when doing co-creation with children as will be explained in the next section. (A. Ogaeri, personal communication, September 14, 2021) (I. Pieper, personal communication, June 18, 2021) (H. Emke, personal communication, September 14, 2021)

Minimising the risks

Although the risk of developing a negative mindset and/or disappointment will be there, some actions can be taken to prevent it. Firstly, it is important, when informing the children about the process and possible outcome of the project, to be honest and transparent about what is (or is not) possible. In order to do so, you need to be well informed yourself. It is therefore advised to talk to stakeholders that will be involved in realisation of the design up front, and ask them to review concepts and ideas throughout the process of co-creation. (Stichting Alexander, 2019)

Moreover, working with a group of children in co-creation for the long term is preferred over doing this as part of a project. In long term contact you will then be able to follow up on the research and design, instead of leaving it for another person as soon as the project is finished. This increases the likelihood of actual implementation of the design that derived from the co-creative process. (Stichting Alexander, 2019)

Furthermore, as I found out in this project,

action to follow up on a co-creation project is needed, because in absence of this participants will feel disappointed and/or angry. Co-creation is a valuable method, but primarily when the participants are, and will be part of the target group for the design. Action to follow up a co-creation project is needed to avoid the participating children from growing up faster than their contributed ideas are realised. (A. Ogaeri, personal communication, September 14, 2021)

The above also raises the question whether it would be good to keep the children informed about what is done with their contribution after the children's involvement. One could e.g. do this by organising follow up workshops or meetings with the children to explain the progress to them, or by creating an instagram account where updates about the progress are posted, which the children can follow.

Creating an atmosphere where children feel free to discuss tough topics and experiences

For fellow designers I would like to recommend creating a safe environment during the workshops where the children feel comfortable sharing their true opinions and experiences, as this is important for both the quality of the project as well as the well being of the children. It is key to take time to get to know each other. I did this through games, but also by reserving time during each workshop to check in with one another on how everyone is doing.

This is especially important as tough topics and experiences might be shared during the workshops. Some of the experiences that the children shared during the workshops indicated a rough mind set that I would not have expected from children their age.
For example this is what Youssef shared about his feeling of safety at the Dapperplein:

> Youssef: "Look, I just stand there. I feel safe at the Dapperplein, but it never is. (...) People are being stabbed there. You did not know? That girl from sixth grade, her dad, he almost got killed here by this drunk guy."
> Mustafa and Omar: "Yes, but he was drunk, that

It is important to create a safe environment where the children can talk about these topics and experiences.

Directing discussions to what is relevant to the project

To fellow designers, I would advise to define and communicate boundaries as to what can be discussed during a co-creation workshop.

In this project I often said: "If it is not related to the workshop, it will have to wait until after the workshop". The children were eager to change the topic from our design challenge to something that was on their mind. Some of the children were testing me, trying to take over the conversation topic (E.g. some boys were determined to interview me about porn). Other times children were just very intrigued by something that caught their attention and wanted to discuss that (e.g. the nose ring that my facilitation buddy was wearing).

A feeling of responsibility as an adult makes it more difficult to set these boundaries, as you want to make space to talk about the topics that the children bring up. This especially happens when you want to avoid creating a taboo, with topics such as gender equality, homosexuality, insecurity or eating disorders (which in this project were all brought up by the children). A similar difficulty might occur when children say or do something that conflicts with your personal ethics. During this project, this happened when the children would act nastily towards one another or voiced an opinion that conflicts with my ethics, e.g. against gay marage.

Nevertheless, I recommend setting clear boundaries as to what can be discussed during a workshop.

Working with facilitation buddies

I would advise fellow designers to invite a buddy to the workshops. Besides helping out with practical matters, a facilitation buddy adds personal qualities to the workshops (e.g. being good at asking provoking questions, or having experience with keeping order).

During this project one difficulty was that I could not guarantee the facilitation buddies a good experience, as the participating children could be rough. This made it more difficult to find buddies. It also made me less focussed during a workshop, when I noticed that my buddy was having a bad time (one time ending in tears) when the children were acting up.

Nevertheless, the presence of a facilitation buddy is very helpful. I therefore recommend inviting a facilitation buddy to a workshop.

11.3 Personal note

I chose this graduation project since I wanted to work on a societal challenge, in co-creation with a group that is not commonly involved in the decision making process. This project therefore was a perfect fit. It offered a lot of opportunities to explore design, and myself as a designer in this context. I feel encouraged to discover more ways of designing for societal challenges. I am looking forward to new opportunities to come along!

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Appendices

DESIGN FOR our future

TUDelft

IDE Master Graduation
Project team, Procedural checks and personal Project brief

This document contains the agreements made between student and supervisory team about the student's IDE Master Graduation Project. This document can also include the involvement of an external organisation, however, it does not cover any legal employment relationship that the student and the client (might) agree upon. Next to that, this document facilitates the required procedural checks. In this document:

- The student defines the team, what he/she is going to do/deliver and how that will come about.
- SSC E&SA (Shared Service Center, Education & Student Affairs) reports on the student's registration and study progress.
- IDE's Board of Examiners confirms if the student is allowed to start the Graduation Project.

① USE ADOBE ACROBAT READER TO OPEN, EDIT AND SAVE THIS DOCUMENT
Download again and reopen in case you tried other software, such as Preview (Mac) or a webbrowser.

STUDENT DATA & MASTER PROGRAMME
Save this form according the format "IDE Master Graduation Project Brief_familyname_firstname_studentnumber_dd-mm-yyyy".
Complete all blue parts of the form and include the approved Project Brief in your Graduation Report as Appendix 1 !   ①

family name	Hollander	Your master programme (only select the options that apply to you):
initials	L. T. given name Luna	IDE master(s): ( ) IPD (★) DfI ( ) SPD
student number		2nd non-IDE master:
street & no.		individual programme: ___ - ___ (give date of approval)
zipcode & city		honours programme: (Honours Programme Master)
country		specialisation / annotation: (Medisign)
phone		(Tech. in Sustainable Design)
email		(Entrepeneurship)

SUPERVISORY TEAM **
Fill in the required data for the supervisory team members. Please check the instructions on the right !

** chair	Dr. Kraal, J.J.	dept. / section:	HCD / AED	Chair should request the IDE Board of Examiners for approval of a non-IDE mentor, including a motivation letter and c.v..
** mentor	MSc. Gielen, M.A.	dept. / section:	HCD / DCC	①
2nd mentor	Prof. dr. M. Chin A Paw			① Second mentor only applies in case the assignment is hosted by an external organisation.
	organisation: Amsterdam UMC			
	city: Amsterdam	country: Netherlands		
comments (optional)				① Ensure a heterogeneous team. In case you wish to include two team members from the same section, please explain why.

IDE TU Delft - E&SA Department /// Graduation project brief & study overview /// 2018-01 v30   Page 1 of 7

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Procedural Checks - IDE Master Graduation

APPROVAL PROJECT BRIEF
To be filled in by the chair of the supervisory team.

chair   Dr. Kraal, JJ.   date   10 - 09 - 2021   signature

CHECK STUDY PROGRESS
To be filled in by the SSC E&SA (Shared Service Center, Education & Student Affairs), after approval of the project brief by the Chair.
The study progress will be checked for a 2nd time just before the green light meeting.

Master electives no. of EC accumulated in total: _____ EC

Of which, taking the conditional requirements
into account, can be part of the exam programme   _____ EC

List of electives obtained before the third
semester without approval of the BoE

( ) YES   all 1st year master courses passed

( ) NO   missing 1st year master courses are:

name _____   date ___ - ___ - ___   signature _____

FORMAL APPROVAL GRADUATION PROJECT
To be filled in by the Board of Examiners of IDE TU Delft. Please check the supervisory team and study the parts of the brief marked **.
Next, please assess, (dis)approve and sign this Project Brief, by using the criteria below.

- Does the project fit within the (MSc)-programme of the student (taking into account, if described, the activities done next to the obligatory MSc specific courses)?
- Is the level of the project challenging enough for a MSc IDE graduating student?
- Is the project expected to be doable within 100 working days/20 weeks ?
- Does the composition of the supervisory team comply with the regulations and fit the assignment ?

Content: ( ) APPROVED   ( ) NOT APPROVED

Procedure: ( ) APPROVED   ( ) NOT APPROVED

comments

name _____   date ___ - ___ - ___   signature _____

Initials & Name   L. T.   Hollander   Student number _____
Title of Project   Design for physical activity of youth at the Dapperplein

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Personal Project Brief - IDE Master Graduation

Design for physical activity of youth at the Dapperplein   project title

Please state the title of your graduation project (above) and the start date and end date (below). Keep the title compact and simple.
Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.

start date   13 - 09 - 2021   18 - 02 - 2021   end date

INTRODUCTION **
Please describe, the context of your project, and address the main stakeholders (interests) within this context in a concise yet complete manner. Who are involved, what do they value and how do they currently operate within the given context? What are the main opportunities and limitations you are currently aware of (cultural- and social norms, resources (time, money,...), technology, ...).

This project aims to design an intervention at the public environment of the Dapperplein to stimulate physical activity of youth.

Since 1975, obesity has nearly tripled globally, indicating a clear trend that threatens public health. In 2016, over 1.9 billion adults (18 years and older) were overweight. Of these over 650 million were obese, accounting for 13% of the adult world population. The impact of obesitas on an individual appears in an increased risk of cardiovascular diseases (primarily heart disease and stroke) and some cancers, as well as experiencing difficulties like breathing disorders, sleep apnea and pain in lower back and knees on a daily basis (Xu & Xue, 2015). (World Health Organisation, 2021)

Even though overweight and obesity are largely preventable by feeding on a nutritious diet and performing regular physical activity (150 minutes of moderate-intensity, or 75 minutes of high-intensity a week), the latter is not achieved by 28% of the world population of 18 years and older. (World Health Organisation, 2020)

Encouraging performance of physical activity is especially key in children, since habits of sedentary behaviour tend to stick with a person from youth to adulthood, as Hirvensalo & Lintunen (2018) describe. Their study on the physical activity of children of school age from 22 European countries (n=115 981) shows a decline of children meeting the primary UK health education authority guideline from the age 11 to 13, and 13 to 15, throughout Europe. The decline might be caused by increased social awareness and/or insecurity towards one's body as its physical shapes alter during puberty (Alberga et al, 2012). However, above all, change in habits of physical activity are visible during periods of transitions and life changes, such as change in family composition or employment (Hirvensalo & Lintunen, 2018). Dutch children at the age of 10 to 12, collectively experience a life change as such as they transition from primary school to high school. Encouraging creation of healthy behaviour at this age is therefore promising.

Currently, only 20% of Dutch children of 11 years old meet the World Health Organisation guidelines for physical activity by participating in more than an hour of physical activity a day (Volksgezondheidenzorg.info, 2020).

A party that addresses the lack of physical activity of Dutch children is a research team Amsterdam based University hospital AUMC. Together with the Municipality of Amsterdam they seek solutions to implement in the public environment of the city of Amsterdam. Previous collaborative research projects, such as LIKE (LIKE, 2021), examined the needs and wishes of children, revealed the potential of the design of an intervention at the Dapperplein in Amsterdam after closing hours of the daily market.

However, what the design of the intervention at the public environment of the Dapperplein to stimulate physical activity of youth should entail remains unknown. This project therefore aims to fill this knowledge gap through extensive research and a co-creative design process that actively engages children living near the Dapperplein.

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Initials & Name   L. T.   Hollander   Student number _____
Title of Project   Design for physical activity of youth at the Dapperplein

introduction (continued): space for images

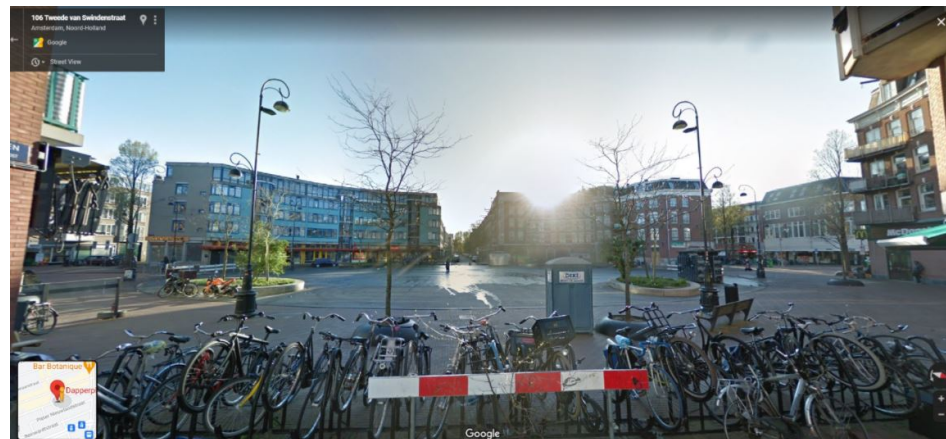image / figure 1:   Dapperplein in Amsterdam by day; a lively market.

image / figure 2:   Dapperplein in Amsterdam by night; an open space with the potential for physical activity of youth.

PROBLEM DEFINITION **
Limit and define the scope and solution space of your project to one that is manageable within one Master Graduation Project of 30 EC (= 20 full time weeks or 100 working days) and clearly indicate what issue(s) should be addressed in this project.

In the context of addressing the global trend of physical inactivity leading to an increased number of obesitas patients, to achieve positive impact this project works within the scope of the public environment of the Dapperplein in Amsterdam after closing hours of the daily market in co-creation with children (10 to 12 years old) of the Dapperschool.
Common interventions at the Dapperplein entail information booklets and sports events organised by Dynamo, an organisation operating in Amsterdam.
A reason why these interventions fail to make a stop to the trend of inactivity in youth could be that, even though the interventions are aimed for children, children are commonly left out of the decision making process about the public environment, which can lead to a misfit between the solution and the need(s) of the user. Even when children are included in the decision making process, it is commonly done from an adults' perspective on the childrens' lives, leaving a knowledge gap on the first hand perspective of the children. (Shortt & Ross, 2021) Therefore, this project will engage children living near the Dapperplein in the process of designing interventions at the Dapperplein.
As children interact on a daily basis with the public environment of the Dapperplein, a design intervention here is potentially effective. This location for the design brings both limitations and opportunities. The Dapperplein is surrounded by cafes and homes and hosts a market, the Dappermarkt, from Monday to Saturday, 9:00 to 17:00. This market consumes a considerable amount of space at the square, with its market stalls, trucks delivering supplies, visitors dropping by and market sellers making an effort to be heard. This leaves little space for children to perform physical activity. After closing hours however, the square is cleared and a large open space in the heart of the city is revealed. This project derives potential from this open space, by designing something to be used at the Dapperplein after the market's closing hours.

ASSIGNMENT **
State in 2 or 3 sentences what you are going to research, design, create and / or generate, that will solve (part of) the issue(s) pointed out in "problem definition". Then illustrate this assignment by indicating what kind of solution you expect and / or aim to deliver, for instance: a product, a product-service combination, a strategy illustrated through product or product-service combination ideas, ... In case of a Specialisation and/or Annotation, make sure the assignment reflects this/these.

This graduation project pursues sustainably healthier behaviour for youth living in Amsterdam, by designing (a) way(s) for the Dapperplein to be more inviting towards the neighbourhood's youth to perform physical activity after closing hours of the Dappermarkt. To do this, the project engages children (age 10 to 12) of the Dapperschool to participate in a co-creative process.

The main research question of this project will be: How to promote physical activity of youth at the Dapperplein, through co-creation with children (age 10 to 12)?

In order to design solutions to promote the youth's physical activity, physical activity as such needs to be understood thoroughly. Therefore a sub research question is: How to promote physical activity of youth?
The public environment of the neighbourhood will be researched, with respect to the neighbourhood's socio-cultural aspects, as well as physical aspects, for this will likely add design criteria as not only the target group (the children) will use it, but also other users of the public environment with their own needs and wishes. This leads to the sub research question: How to design for the public environment of the Dapperplein after closing hours of the Dappermarkt?
The method of co-creation with youth needs to be researched in order to apply it effectively. A sub research question will therefore be: How to work with youth in a co-creation process?

As a result of this project I wish to deliver a recommendation for a design intervention to Amsterdam UMC and the municipality of Amsterdam on (a) way(s) to enhance the Dapperplein to foster physical activity of youth living near the square. Through prototyping I aim to test and embody the recommended design intervention. The recommended design will be visualised, through illustrations, photos and videos, to communicate its relevance, features and interaction.

PLANNING AND APPROACH **

Include a Gantt Chart (replace the example below - more examples can be found in Manual 2) that shows the different phases of your project, deliverables you have in mind, meetings, and how you plan to spend your time. Please note that all activities should fit within the given net time of 30 EC = 20 full time weeks or 100 working days, and your planning should include a kick-off meeting, mid-term meeting, green light meeting and graduation ceremony. Illustrate your Gantt Chart by, for instance, explaining your approach, and please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any, for instance because of holidays or parallel activities.

start date   13 - 9 - 2021   18 - 2 - 2021   end date
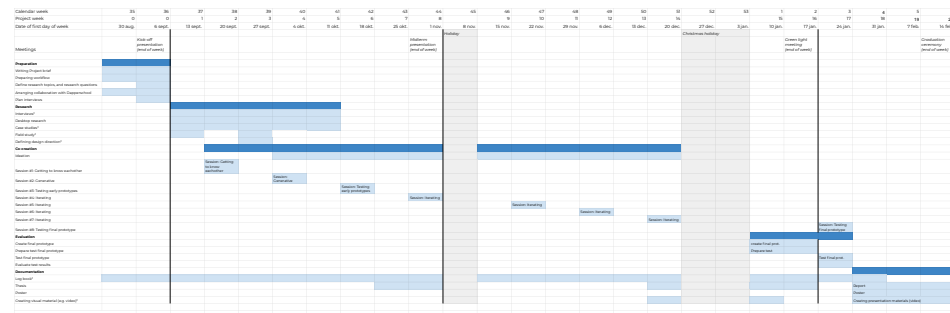

Table 1 presents the planning for this graduation project. Note how the project consists of 5 consecutive segments: Preparation, Research, Co-creation, Evaluation and Documentation. Considering the iterative, and fluent nature of a design process the segments are partially overlapping.

A segment that is especially unique to this graduation project is Co-creation, during which 8 interactive workshops with a total of 12 to 18 children of the Dapperschool are facilitated. During the workshops the children design together with me solutions to the design challenge. During workshops 1 and 2 we will explore the current situation, define the problem and reframe the design challenge. In workshop 3 and 4 we ideate to find solutions. Workshop 5 to 7 will be geared towards creating, testing and evaluating prototypes. After which the workshop series concludes with an 8th workshop where I will test and evaluate the final prototype.

My own design process and the process shared with the children will exist in parallel. Therefore, a workshop could start with a recap of previous ideation, then introducing next steps I took, and optionally presenting them a prototype to test. While doing so, it's important to ensure that the children keep on feeling ownership about the design (process).

Interviews: I aim to interview people from various stakeholder groups as they are experts on their own experience, as well as external experts, such as people experienced in Design for Play, Co-creation with children, or experts on design for enhancement of physical activity.

Case studies: Through literature review and/or expert interviews, I will study how other public squares succeed or fail to encourage youth to engage in physical activity, I expect to gain insight into the factors that play a role in this matter.

Fieldstudy: It is key to get to know the location thoroughly. By visiting the Dapperplein and surrounding neighbourhood, I'm able to experience the location first hand, do observations and interview people at the location.

Initials & Name   L. T.   Hollander   Student number

Title of Project   Design for physical activity of youth at the Dapperplein

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MOTIVATION AND PERSONAL AMBITIONS

Explain why you set up this project, what competences you want to prove and learn. For example: acquired competences from your MSc programme, the elective semester, extra-curricular activities (etc.) and point out the competences you have yet developed. Optionally, describe which personal learning ambitions you explicitly want to address in this project, on top of the learning objectives of the Graduation Project, such as: in depth knowledge a on specific subject, broadening your competences or experimenting with a specific tool and/or methodology, ... Stick to no more than five ambitions.

After my graduation I would like to work for a design agency or governmental organisation that addresses societal challenges, e.g. designing for people in debts, analfabetics or, like this project, designing to increase physical activity of youth. This graduation project could be a good preparation for a career in this field.

To design for societal challenges in an inclusive way, co-creation is a valuable method, as the needs and wishes of many stakeholders should be considered and incorporated when you shape the public physical and legal environment. As I want to learn to design inclusively, I like how this project allows me to work with a group (children) that are not always included in the design process.

Furthermore, I want to develop healthy working habits for myself. For me this means working only during office hours, eating proper lunch during a working day and making time for a conversation with other graduate students about their projects. Past experience teaches me how with larger projects, I get immersed to an extent at which I will want to exceed my working hours to make the best of the project. Even though I still enjoyed these projects, I believe this is not a sustainable way of handling work. In this project I therefore want to create the mentioned healthy working habits in an effort to make my (future) work conditions as pleasant as possible.

Also, this project provides nice challenges, since it will bring new experiences for me. Working with children is new to me, likewise working with the same group for more than two consecutive sessions is new to me. Also, it will be the first time that I will, besides having the role of facilitator in the workshops, immerse myself in the co-design together with the participants.

Additionally, I expect to learn from applying a hands-on approach, e.g. by creating and testing prototypes with the kids and other stakeholders. I hope to expand my knowledge and know-how on rapid prototyping, and equally rapid testing.
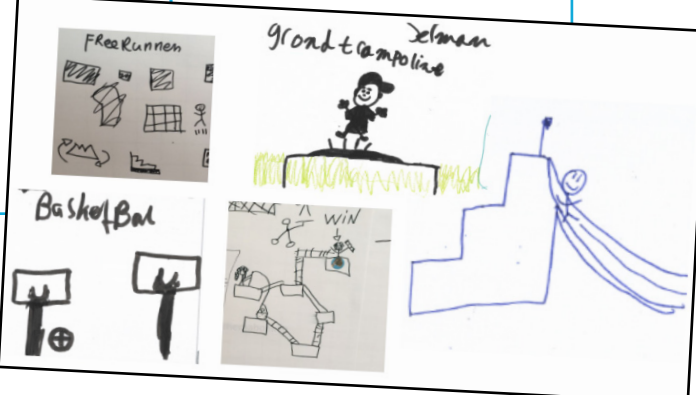
FINAL COMMENTS

In case your project brief needs final comments, please add any information you think is relevant.

Initials & Name   L. T.   Hollander   Student number

Title of Project   Design for physical activity of youth at the Dapperplein

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Appendix B: Selection of ideas

Physical playing equipment

Origin of the idea	Explanation of the idea	Value of the idea
During the workshops various children suggested physical playing equipment such as a slide, basketball hoops, a parkour with obstacles connected by ladders.	Physical playing equipment would be installed at the Dapperplein.	Children would be able to play with physical playing equipment.

Drawn by Karam, Naima, Nuri and Omar

Creating space for people to hang out

Origin of the idea	Explanation of the idea	Value of the idea
Nahla and Omar suggested that there should be more restaurants and bars at the Dapperplein. According to them this would improve the atmosphere, and more people at the Dapperplein would make the square more vibrant and cosy. The children indicate to feel safe and at ease at locations where more people are present (section 4.4)	More space would be created for people to hang out at the Dapperplein. These could be restaurants and bars, as Nahla and Omar suggested.	This idea could increase the feeling of safety for the children and their parents. It would thereby encourage the children to play outside at the Dapperplein in the evening.

Drawn by Omar

Drawn by Nahla

Adding a market stall to the Dappermarkt dedicated to encouraging physical activity of children in the Dapperbuurt

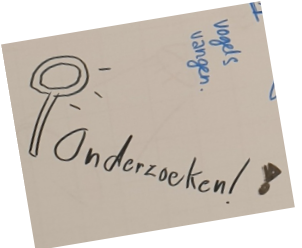| Origin of the idea	Explanation of the idea	Value of the idea
"I always need to join my mom to the market. It is always boring." - Naima "Maybe we can have our own market stall!" - Zara	A market stall at the Dappermarkt would be run by the municipality and is dedicated to children. At the stall children can connect to potential playmates, give their input on sports events that the municipality is organising, organise a sports event themselves, or play games with other visitors at the market stall.	This idea might create a feeling with the children that their needs and wishes concerning doing sports and playing outside in the Dapperbuurt are taken seriously. It is an easy and accessible way for the children to play at the market. Furthermore, they can give their input to the municipality employees behind the market stall, potentially resulting in better fitting interventions.

Exploring hidden treasures

Origin of the idea	Explanation of the idea	Value of the idea
Nuri suggests that children could research the behaviour of animals that are feasting on the market left-overs.	Treasures are hidden at the Dapperplein. Children need to move from one to the other treasure to collect them. The treasures could e.g. reveal a mystery at the Dapperplein that the children solve as they collect all the treasures and work out various riddles.	The children would walk and/or run across the Dapperplein to find the next treasure, thereby performing (light) physical exercise.

Drawn by Nuri

Exploring personality through expanding knowledge on different people and social groups in the Dapperbuurt

Origin of the idea	Explanation of the idea	Value of the idea
The children are in a dynamic transitioning phase and explore their personality (as explained in section 4.1)	Children of 10 to 12 have a drive to explore their personality. This idea includes an online game where children challenge each other in various ways to interact with people on the streets. E.g. A challenge could be to interview someone that wears clothing that expresses a religion or belief. By interacting with people that the children would normally not be in contact with, they expand their knowledge on people and social groups. This might help them to define their own personality and place in society. The challenges involve a time limit, and thereby include running.	The idea uses children's intrinsic motivation to explore their personal identity to motivate them to do physical activity

Mobile playing equipment on rails

Origin of the idea	Explanation of the idea	Value of the idea
Playing equipment could be installed on rails, so the children can move it to the centre of the square during the evening and back once they're done playing.	This idea involves playing equipment installed on rails. The children can thereby move the equipment to the centre of the Dapperplein by night. In the morning, the market vendors push the equipment back to the outer edges of the square, to make space for the market.	This idea allows for children to play and exercise with physical playing equipment. The market is barely negatively affected by it, which increases the likelihood of implementation. Additionally, the equipement blocks the way for cars in the evening, which improves safety.

Playing equipment that can be moved using an electric hand pallet truck

Origin of the idea	Explanation of the idea	Value of the idea
As explained in section 4.5, The Dappere Bomen (see picture) are tree basins that were placed at the Dapperplein. The basins can be moved using an electric hand pallet truck. The tree basins are designed to be moved to the centre of the square on Sundays when there is no market, to block cars from crossing the square and to create a more green appearance of the square. What if the same principle can be applied for playing equipment?	Applying the same principle as the Dappere Bomen to move playing equipment to the centre of the Dapperplein to play and back to the outer edges of the square to make space for the market. 	This idea allows for children to play and exercise with physical playing equipment. The market is barely negatively affected by it, which increases the likelihood of implementation. Additionally, the equipement blocks the way for cars in the evening, which improves safety. *Picture retrieved from the Instagram of the "Stadsdeelvoorzitter Amsterdam Oost"*

Stationery market stalls, that after market hours function as fitness objects
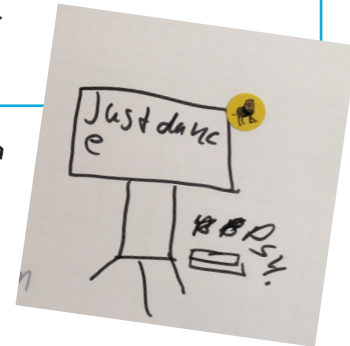
Origin of the idea	Explanation of the idea	Value of the idea
Parts of market stalls of the Dappermarkt could be permanently installed. A market vendor only adds components to the permanent construction, such as the canvas protecting against rain, and the wooden board used as a table. After market hours, the permanent construction can be used by children as playing equipment. When this idea is discussed a workshop: Mustafa: "Ik zou als ik hier was (op de tekening van een marktkraam) die trek dingen gebruiken." (Hij maakt een gebaar dat laat zien dat hij de stalen constructie van de marktkramen als buis gebruikt om zich aan op te trekken.)	Parts of market stalls of the Dappermarkt could be permanently installed. A market vendor only adds components to the permanent construction, such as the canvas protecting against rain, and the wooden board used as a table. After market hours, the permanent construction can be used as fitness objects.	This idea allows for children to play and exercise with physical playing equipment. Additionally, the design would block the way for cars in the evening, which improves safety.

Playing with projections

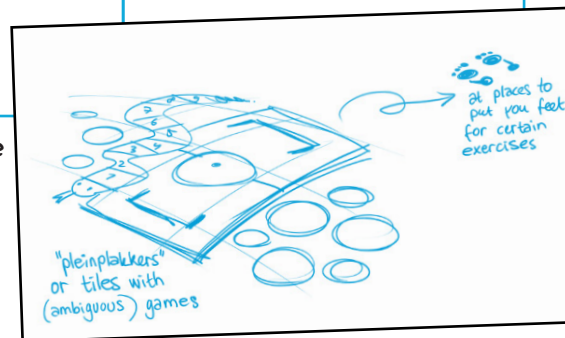| Origin of the idea	Explanation of the idea	Value of the idea
Omar drew this idea of playing Just Dance (a digital game where you do a dance battle. The opponent that best mimics the dancer on the screen wins)	Projectors are installed at the Dapperplein that project moving objects that children can play with. Children can come up with their own games based on the projected moving shapes.	The projections could provide impulses for play, and challenge children's creativity to come up with their own ways of playing with it.

Drawn by Naima

Playing with colored markings on the ground

Origin of the idea	Explanation of the idea	Value of the idea
Carlos Opoku (program manager of sports facilities in the Dapperbuurt), mentioned that colored markings on the ground are popular at school grounds. Children have various games they can play even with just four drawn squares.	Coloured markings of abstract shapes would be applied on the ground. Children can come up with their own games based on the coloured markings.	The projections could provide impulses for play, and challenge children's creativity to come up with their own ways of playing with it.

Drawn by me

Playing with fountains

Origin of the idea	Explanation of the idea	Value of the idea
Aimy Ogaeri (working at Stichting Alexander, an agency that does participatory research with youth) shares during an interview how children that she worked with indicated their liking of the Haarlemmerplein in Amsterdam, shown on picture at the right. The children enjoy playing with the fountains.	Fountains would be installed in ground of the Dapperplein.	The projections could provide impulses for play, and challenge children's creativity to come up with their own ways of playing with it.

Picture retrieved from SustainableAmsterdam.com

Playing with lights in the ground

Origin of the idea	Explanation of the idea	Value of the idea
Example of a square that uses lights in the ground to inspire children's play shown at the right.	Lights could be installed in the ground of the Dapperplein to inspire children's play.	The lights in the ground could provide impulses for play, and challenge children's creativity to come up with their own ways of playing with it.

Picture retrieved from Sohu.com

Creating sounds through movement

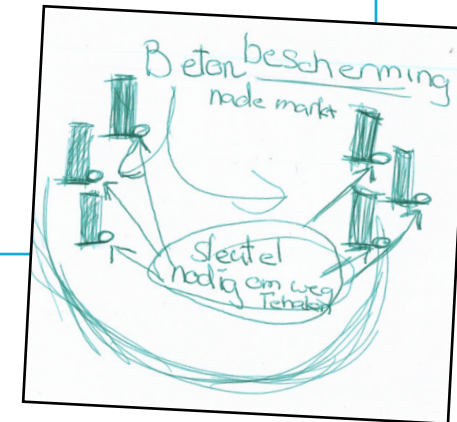| Origin of the idea	Explanation of the idea	Value of the idea
A piano is shown on the ground. When a child steps on a key, the key lights up and you hear a sound.	Playing equipment could be installed at the Dapperplein that produce a sound when moved, e.g. bumbing two hollow metal bowls into each other to create a deep sound or creating a rattling sound by shaking chains.	Children would need to move in order to produce a sound, thereby performing physical exercise.

Drawn by Naima

Physical barriers for traffic that can be removed

Origin of the idea	Explanation of the idea	Value of the idea
Jamal suggests that concrete poles could be drawn from the ground to stop traffic from passing the Dapperplein. In the morning, by using a key, the poles are unlocked and hidden in the ground to allow the cars of the market vendors to park on the Dapperplein to build their stands.	Concrete poles could be drawn from the ground to stop traffic from passing the Dapperplein. In the morning, by using a key, the poles are unlocked and hidden in the ground to allow the cars of the market vendors to park on the Dapperplein to build their stands.	By forming a physical barrier for traffic to cross the Dapperplein, this idea could increase safety.

Drawn by Jamal

Engaging residents of the Dapperbuurt in play

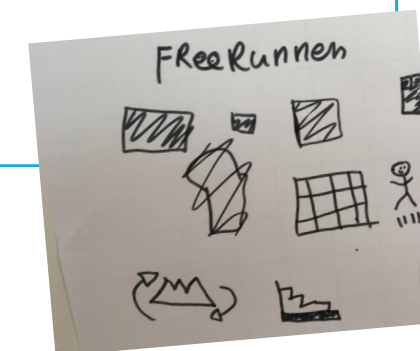| Origin of the idea	Explanation of the idea	Value of the idea
Zara suggests playing Ding Dong Ditch at the Dapperplein. In this game she and her friend ring a bell of one of the residents, then they run away and look from a distance how the resident opens the door and is confused as no one is there. The indicate to feel more comfortable and safe when there is other people around (section 4.4). Meeting up with a sports-buddy increases likelihood of creating a habit of performing physical activity (personal ideation).	Zara's idea points out how it could be fun to involve other residents (both children and adults) of the Dapperplein in play, e.g. by being sport buddies with a resident of the Dapperplein and meeting up with this person to do sports at the Dapperplein together.	This idea might increase the feeling of safety, as it suggests meeting up with other people at the Dapperplein.

Drawn by Zara

Obstacles for free running

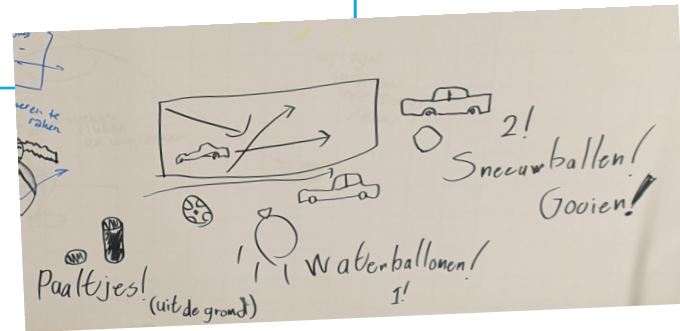| Origin of the idea	Explanation of the idea	Value of the idea
Nahla and Omar suggest doing Free running at the Dapperplein. Free running is a sport where you run a parkour, passing various physical obstacles on the streets. The obstacles are usually walls and other objects that are part of the man-made public environment. It is about passing the obstacles as quickly as possible, as well as applying various tricks to add artistic value.	Obstacles for free running would be added to the Dapperplein.	Children could use the obstacles to do free running, thereby performing physical activity. Furthermore, the obstacles prevent cars from crossing the Dapperplein, thereby increasing safety.

Drawn by Omar

| Playing a game where you need to hit a target		
Origin of the idea	Explanation of the idea	Value of the idea
At the Dapperplein is a transparent screen. Through the screen you can see the cars that pass behind the screen. When you hit the screen with a water balloon or ball at the spot where a car passes, you win points.	A moving target is projected on a surface. With a ball children aim to hit the target.	This idea offers stimuli for play.

Drawn by Nuri

Engaging the people that hang around in sports and play		
Origin of the idea	Explanation of the idea	Value of the idea
We explored the question whether the identified reasons of not wanting to play outisde at the Dapperplein could be turned into opportunities.	The people that hang out at the Dapperplein and consume alcohol become part of the children's play: they become judges for a battle, or living objects around which the children need to run.	Something that makes the children feel unsafe at the Dapperplein is turned into something that is part of their play.

Drawn by me based on input of Salila, Jasmine and Nahla.
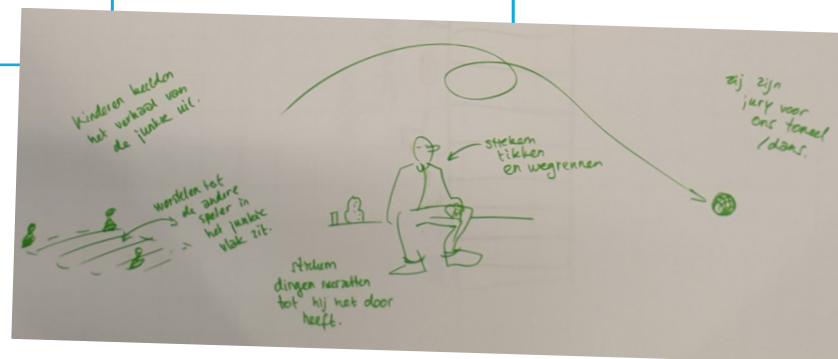
## Appendix C: Iteration by the children that participated in workshop 3 on the concept that appeals most to them
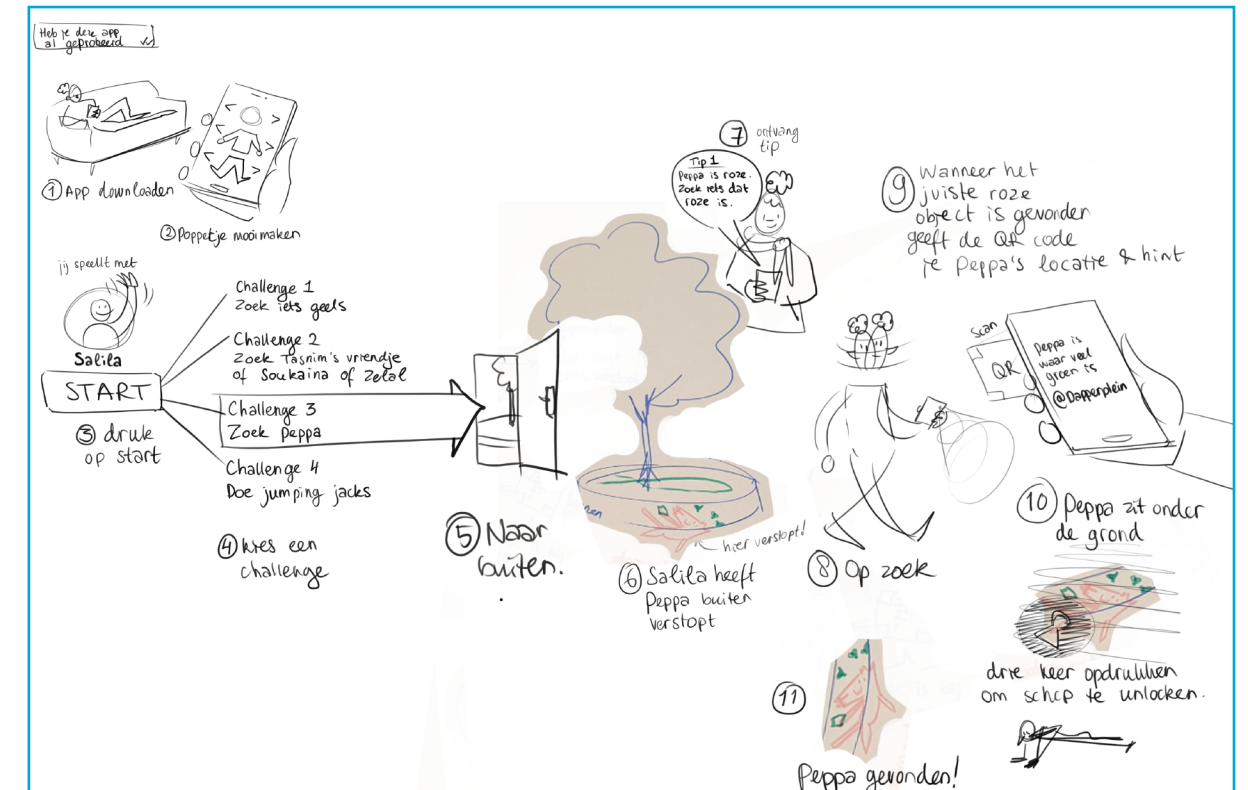
A scenario of concept "Dapper Game" that Salila, Nahla and Jasmine created during workshop 3, including their iterations on the concept.

1. A friend recommends the Dapper Game app.
2. Downloading the Dapper Game application.
3. Creating a character to play with in the game.
4. The app introduces you to your co-player. You press start.
5. You choose a challenge.
6. You go outside.
7. Your co-player has hidden Peppa Pig (a cartoon figure in the game).
8. The app provides you with a clue of where Peppa Pig is hidden.
9. You explore the Dapperbuurt, while looking for Peppa Pig.
10. You resolved the clue. At the location where you did so, you find a QR code and scan it. It gives you a new clue and location of where Peppa Pig is hidden.
11. You go to the location, and using the clue, you find out that Peppa Pig is hidden under the ground. The app tells you to do three push-ups to unlock a virtuel shovel.
12. After doing the push-ups, you receive the virtuel shovel and you are able to free Peppa Pig. You have found her. Challenge completed.
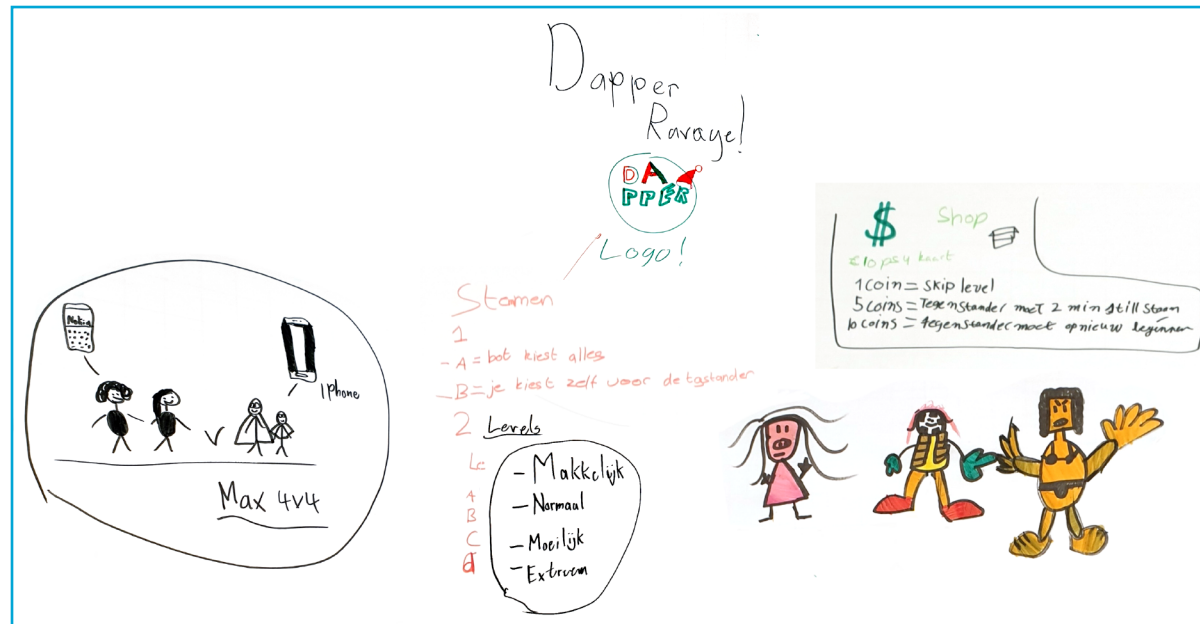
A scenario of concept "Dapper Game" that Karam, Nuri and Jamal created during workshop 3, including their iterations on the concept.

1. The game is called Dapper Ravage and comes with a logo.
2. Two teams battle. Both teams have at least one phone with them. A maximum of four against four players can join.
3. The players meet at the Mcdonalds at the Dapperplein.
4. The players vote to determine whether (A) the app chooses the challenges, or (B) the teams choose challenges for one another.
5. The players choose a level they want to play. Difficulty is adjusted accordingly.
6. The players choose for how long they want to play, either 30 minutes or 60 minutes.
7. The players compete in challenges such as spotting a red car, or performing soccer tricks while people on the streets are the jury. As a

bonus challenge the teams do a race.
8. Both teams take half of the Dapperplein to do the challenges.
9. While performing the challenges the app reminds the players how much time is left. The app also reminds the players to drink water and take breaks.
10. When the time is up the players gather at the Dapperplein. The app counts the points. The winner is announced. Both teams receive coins according to how well they did. Coins can be used in future games. With 1 coin a team can skip a level. With 5 coins the player can make another opponent stand in one place for two minutes. With 10 coins, the opponent needs to start over.

Appendix D: Evaluation of the concepts by the municipality

Appendix D: Evaluation of the concepts by the municipality

To evaluate feasibility and desirability for the neighbourhood as a whole, three municipality employees (introduced in section 6.3) that work in the context of the Dapperbuurt share their view on the four concepts. This appendix describes a selection of their comments on each of the concepts and summarises them.

Concept "Verplaatsbare speeltoestellen"
- "It's challenging to arrange a space for a physical object at the Dapperplein, since the market people need space for their cars to turn and their stalls to be up. Also, the fire brigade needs space in case of emergency. On top of that, the restaurants want to have their terrace on the Dapperplein. It is a battle to arrange even a few centimetres." - Martien
- "No one wants to take responsibility (for moving the object from the centre of the square to the side in time for the market to open), since if the objects are still there on Monday morning, the market people will be angry at you." - Martien

Summary: The mobile tree basins, the Dappere Bomen, at the Dapperplein that inspired this concept turn out not to be used. It is therefore unlikely that this concept would be used as intended.

Concept "Marktkramen zijn speeltoestellen" (*most liked concept*)
- "This changes the perspective completely!" - Rodine ("Dit is echt omdenken!")
- "Very cool. This gets me excited." - Rodine
- "Make sure the market people can operate still" - Rodine
- "It's like an iconic art piece" - Rodine
- "This would save the market people a lot of time that they otherwise spend on building their stall" - Martien
- "You would need to discuss this with the fire brigade. (..) Normally, in case of emergency they just lift a market stall or shuff it aside." - Martien

- "The market stalls that are on wheels (such as the fish stall), would need to be able to still turn on the square to drive in and out." - Martien
- "You might need to reconsider the placing of the market stalls." - Rodine
- "We (the municipality) just removed the benches that were at the Dapperplein, because there were people hanging out there at night and consuming alcohol. (...) There are a lot of people with psychiatric problems at the Dapperplein. (...) which is also a reason for parents not allowing their children to be at the Dapperplein by night." - Martien
- "I have never seen this at other squares, so that is cool!" - Rodine

Summary: There are aspects of the concept that need to be validated and designed with consideration to the different users of the Dapperplein (e.g. the market vendors need to be able to do business as usual, the fire brigade needs space to park their truck in case of emergency). Despite these aspects the concept is most liked by the participants of the feedback session for its potential to combine the needs of the children and the market people in a unique way.

Concept "Dapper Game"
- "This does not interfere with the physical layout of the Dapperplein. It is pu rely a game to get kids to move and think. Nice." - Carlos
- "How 'Dapper' (brave in Dutch) are you, nice." - Rodine
- "You could make a display at the Dapperplein with the challenge of the day and a way to join the app." - Martien
- "I believe this (concept) is most feasible." - Rodine
- "It invites you to play. It is not just a basketball field, but something more artsy." - Rodine

Summary: Rodine, Martien and Carlos did not foresee any trouble with the feasibility of this concept.

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Concept "Speelprikkels" *(considered most feasible)*

- "I do know people tried before to work with painted colours at the Dapperplein, but that turned out to be hard, since the square is made of special asfalt." - Rodine
- "I spoke on the phone with a company that could paint the square. (…) We can not go crazy with colours. White seems to be the most durable." - Martien
- "I like the option of lights, but I wonder how that would go with the market, cleaning of the square. The lights might be too delicate." - Rodine
- "Fountains would also be very fun. However, someone told me that it costs 100.000 euros to get the pump into the ground. You have to tear up the full square, and put all back in place after. It is an expensive intervention that I am sure won't be done in the short term." - Rodine "Yes, unlikely. (…) The current asfalt is only two years old." - Martien
- "Garbage will likely drain into the fountains, and clog it." - Martien
- "Projecting from the fronts of the houses could be nice when it gets dark." - Martien
- "If you go for the projections, you should consider that it is not in all cases allowed to shed light into someone's house. (…) also you need to consider that if you leave dark spots, this should not cause people to trip over." - Martien

Summary: The aspect of using paint and projections to play was elected to be most feasible out of the four concepts. Martien is currently working on a similar design which would implement the colored markings. They indicated how fountains would be hard to implement, as it would require a costly intervention where the square's concrete is redone. They also indicated how implementation of lights could be troublesome because of the (rough) cleaning routine after the market which might damage the lights.