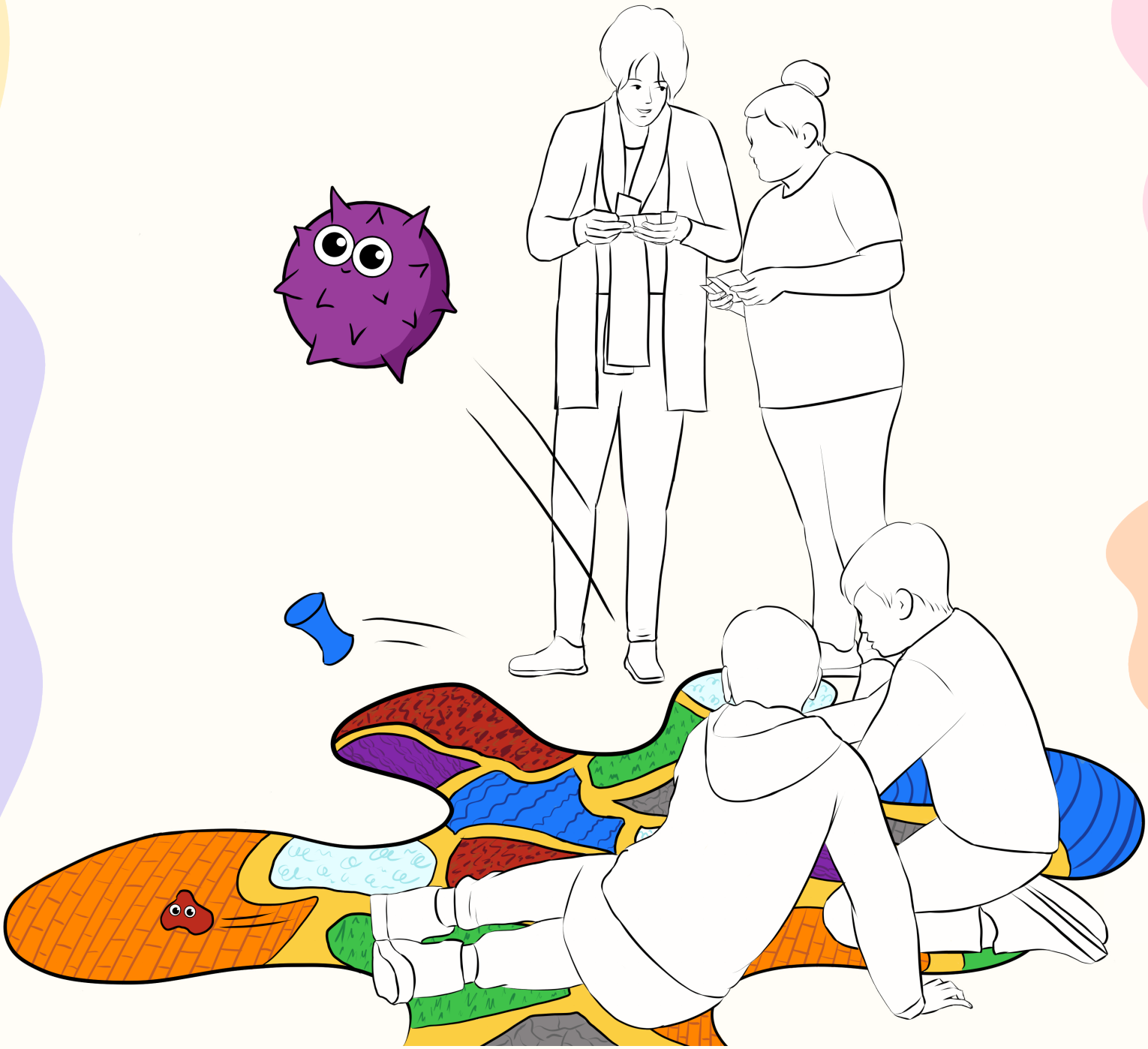
De Voelvlek

Stimulating inclusivity through parental contact



Integrated Product Design
Industrial Design Engineering MSc. Thesis
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De Voelvlek:

Stimulating inclusivity through parental contact

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Part of Research project Samen Spelen (SIA RAAK PRO), Consortium with HU University of Applied Sciences Utrecht, TU Delft and many others (Bloemen et al, 2021; HU, n.d.).

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Reading guide

Abbreviations

CT	=	Child Therapists
CwD	=	Child/Children with Disabilities
CwTD	=	Child/Children with Typical Development
DA	=	Developmental Age
HU	=	HU University of Applied Sciences Utrecht
PCwD	=	Parent/Parents of a Child with Disabilities
PCwTD	=	Parent/Parents of a Child with Typical Development
PwD	=	Person/People with Disabilities
PwTD	=	Person/People with Typical Development
PwID	=	People with Invisible Disabilities
PwVD	=	People with Visible Disabilities

Term explanations

Child Therapists: Different kinds of therapists (e.g. ergo- & physiotherapists) who work with CwD.

Developmental age: The mental age of a person. This term can be used for CwD whose DA is lower than their physical age. As well as for, CwTD whose DA is generally equal to their physical age.

Abstract

Children with disabilities (CwD) experience many barriers decreasing their quality of life and hindering their development. Child therapists support CwD and parents of children with disabilities (PCwD) to participate in daily activities. However, the child therapists indicated to be missing the practical tools to also facilitate inclusive outdoor play. For this reason, the HU University of Applied Sciences Utrecht (HU) set up the Samen spelen project. The Samen spelen project found that PCwD and parents of children with typical development (PCwTD) play a role in the barriers CwD experience as there is a knowledge gap between them. This thesis was set up in collaboration with the HU to further explore the knowledge gap and the role increased parental contact can play in decreasing the barriers CwD experience.

It was found that PCwTD rarely come into contact with CwD and therefore lack the knowledge and skills to treat CwD properly and teach children with typical development (CwTD) about CwD. Additionally, mainly the differences between CwTD and CwD are perceived, preventing the normalisation of CwD.

Based on these findings, the design vision is formulated. The vision focuses on stimulating direct contact between CwD, PCwD, CwTD and PCwTD by guiding the parents to provide input for inclusive play. Followed by stimulating PCwD to help PCwTD correct the children during inclusive play and highlighting the similarities between the children.

Based on this vision, de Voelvlek is designed. The Voelvlek consists of a sensory rug, abstractly shaped balls called ‘monstertjes’ and play cards. The monstertjes are dynamic objects that stimulate spontaneous interaction between PCwD and PCwTD and stimulate bystanders to join the play. The parents can mix and match the play cards to facilitate inclusive play ideas for their children. By discussing the common interests of the children for the play, PCwTD learn about the similarities between CwD and CwTD. When the children are playing the PCwTD can continue this learning process through observation and the questions on the play cards. The play cards use different kinds of questions to stimulate parental interaction and help PCwTD reflect on their behaviour towards CwD and PCwTD.

Table of Contents

1. Introduction

This Chapter provides an introduction to this master thesis by introducing the Samen Spelen project of the HU University of Applied Sciences Utrecht (HU) from which this master thesis is derived, followed by the project aim and project approach.

1.1 Samen spelen project

Currently, it is seen that Dutch children with disabilities (CwD) have little contact with their non-disabled peers and play outside less often (Stichting het Gehandicapte Kind, 2022). This negatively influences their physical, social-emotional and cognitive development, their quality of life and their inclusion in society. As well as preventing the normalisation of disabilities within society, which causes people with disabilities to be continuously disadvantaged. Facilitating inclusive outdoor play can positively impact all of the aforementioned effects.

Child therapists (CT) support CwD and parents of children with disabilities (PCwD) to participate in daily activities. As a result, they have a significant impact on these children's and their parents' lives. However, the CT indicated to be missing the practical tools to also facilitate inclusive outdoor play. Therefore, the HU set up a project, called the 'Samen spelen project' (Figure 1), focusing on the co-creation of toolkits for CT to facilitate inclusive outdoor play (Bloemen et al, 2021).

Figure 1: Samen spelen project (Bloemen et al., 2021).

Additionally, the consortium Samen Spelen, coordinated by the HU, was founded for this research project (HU, n.d.). Figure 2 provides an overview of the institutions, foundations and other organisations involved.

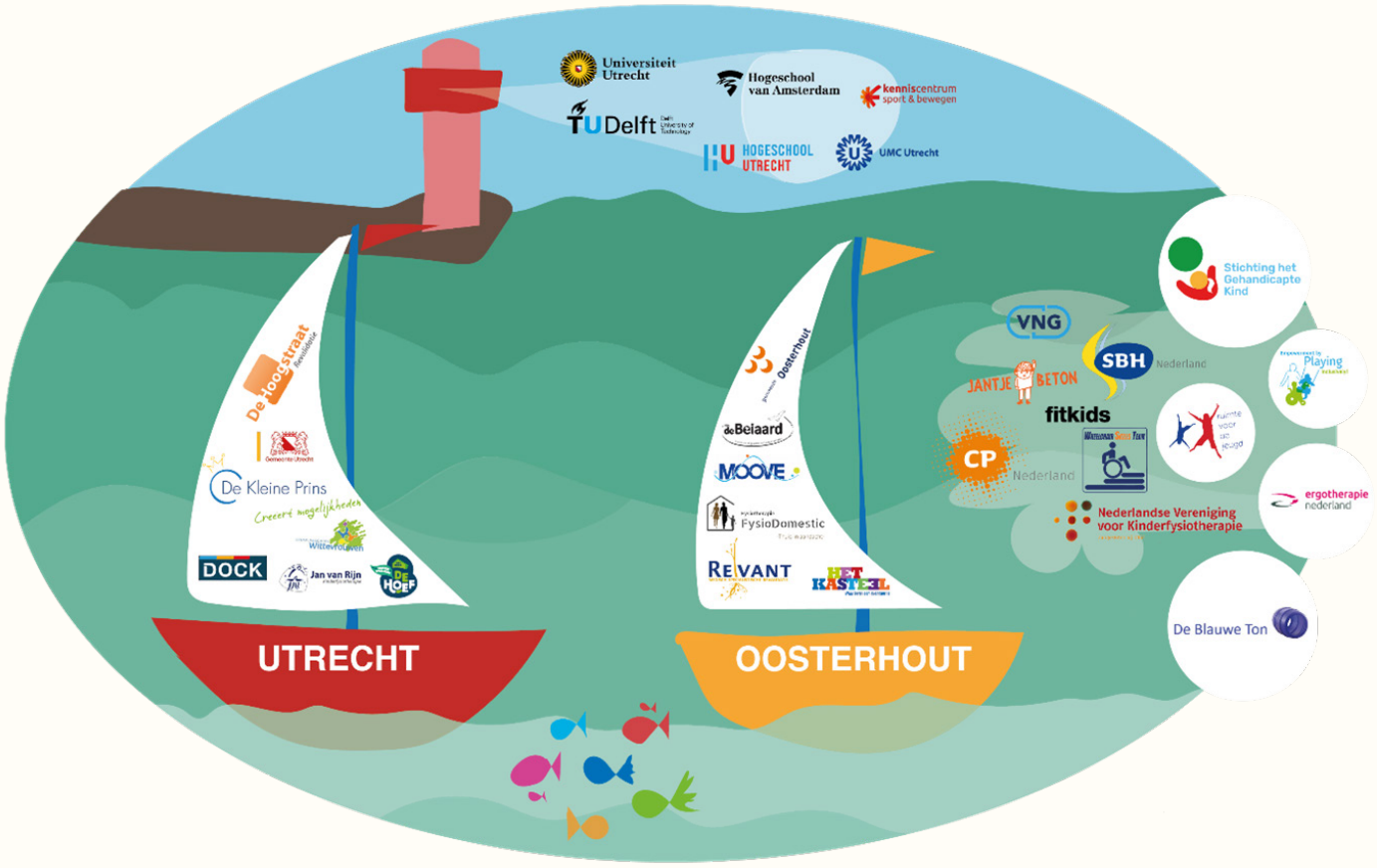


Figure 2: Composition consortium Samen Spelen. (Bloemen et al, 2021; HU, n.d.)

During their research, the consortium found a lot of different factors, stakeholders and barriers that play a role in inclusive outdoor play, shining light on an intricate system of stakeholders and their influences. Within this system, the consortium saw that PCwD and parents of children with typical development (PCwTD) can (unintentionally) have a part in the social barriers that influence CwD (van Engelen et al., 2021).

1.2 Project aim

PCwD play a large role in deciding if and when CwD can go outside to play. Playground experiences can influence these decisions, e.g. social interactions with other parents, the safety of their child or bullying. Parents also influence how much a child can play with their peers. These things can form social barriers for their child (van Engelen et al, 2021).

PCwTD have an influence on how accepted PCwD feel at playgrounds. Furthermore, PCwTD often do not know a lot about CwD and have little to no knowledge of their needs and abilities. As a result, PCwTD either try to prevent dealing with CwD and PCwD, or they become overly worried and protective when dealing with CwD. Therefore, PCwTD often prevent CwD from participating (to their full ability) in play with Children with typical development (CwTD) (Bloemen et al, 2021).

Consequently, a knowledge and social gap between PCwD and PCwTD exists and remains, obstructing CwD and CwTD from playing together.

This came to light during the samen spelen project (Bloemen et al, 2021; HU, n.d.) but will not be addressed yet, as it is planned for a later stage of the project. Therefore, the HU set up this graduation project in collaboration with the TU Delft. This graduation project aims to explore the knowledge gap and barriers between PCwD and PCwTD. Based on those findings a design is made to help mend the knowledge gap, bridge barriers and facilitate contact between PCwD and PCwTD. The results from this thesis will then function as inspiration for the toolkits of the samen spelen project. A further explanation can be found in the project brief (Appendix A).

Figure 3 visualises the factors found by the consortium that influence playing together (Bloemen et al, 2021) and which factors this thesis focuses on.

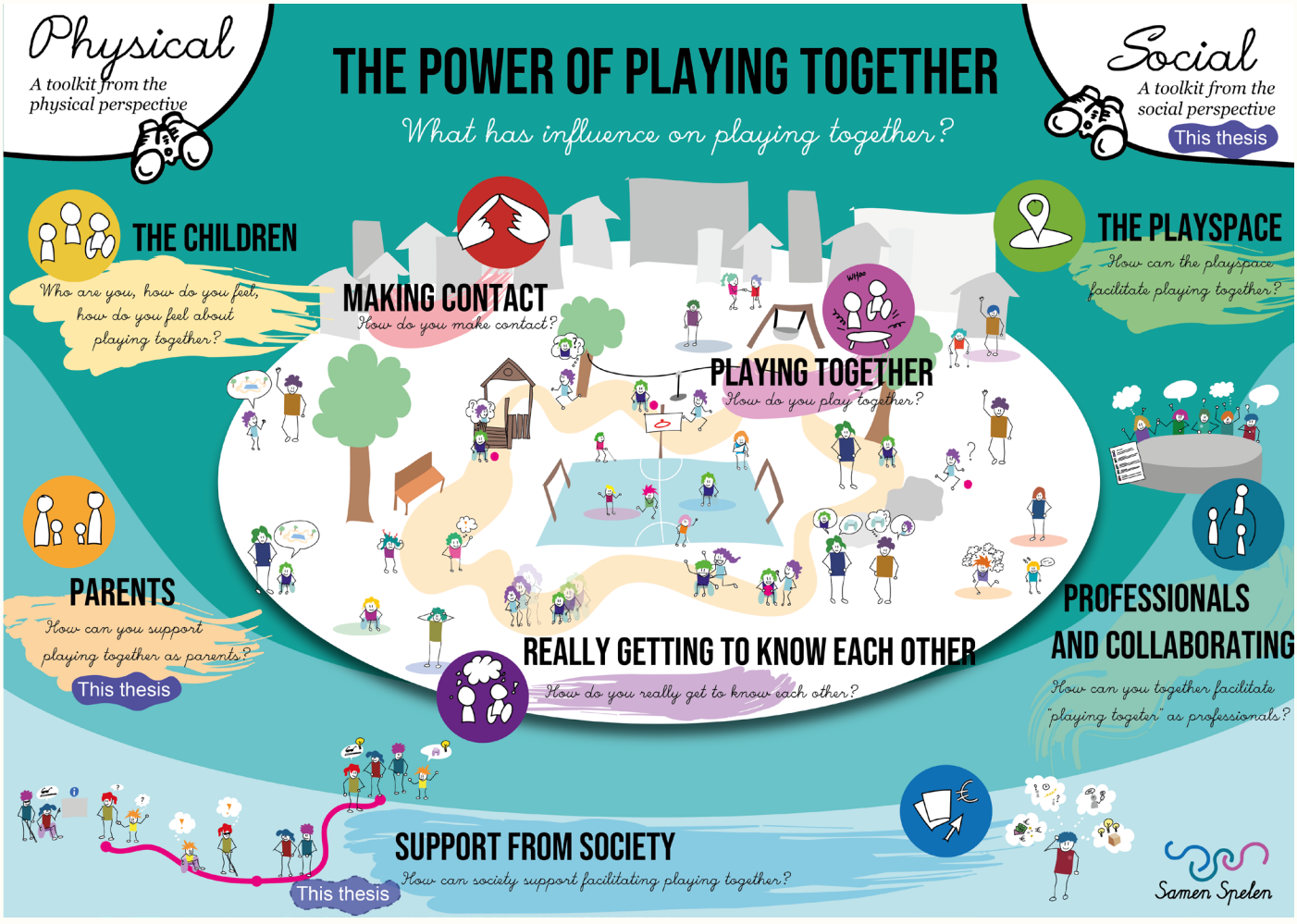


Figure 3: How this thesis connects to the samen spelen project (Bloemen et al, 2021)

1.3 Project approach

For this thesis, first, a broad look was taken at the general context, converging the view per chapter. Table 1 gives an overview of the research questions (and their breadth) per research and test.

Table 1: Main research questions research and test

Literature research	**Chapter 2.1**	**Chapter 2.2**	**Chapter 2.3**	**Chapter 2.4**
	What disabilities are there and what categorisations are used in literature?	How are people with disabilities perceived in the western world societies and what barriers result from this?	How are attitudes (causing barriers) formed and how can they be influenced?	What is the influence of Dutch adults on barriers and what types of Dutch adults are there?
Field research	**Chapter 3.1**	**Chapter 3.2**	**Chapter 3.3**	
	How can the knowledge gap between Dutch PCwD and PCwTD be defined?	How do Dutch adults behave at playgrounds?	What is the experience of Dutch PCwD when visiting playgrounds and talking about CwD's disability?	
Final tests	**Chapter 7.2.1**	**Chapter 7.2.1**		
	Is there a difference in how CwD and CwTD go through the play phases with the prototype and are they capable of playing without adult guidance?	Does the prototype satisfy the design vision and what are the emotions PCwTD and PCwD experience while using the prototype?		

2. Literature Research

The first phase of the design process is the discovery phase. Within this thesis the discovery phase is divided in literature and field research. In this chapter, literature research is conducted to discover more about disabilities in general and barriers faced by people with disabilities (PwD). This provides a deeper understanding of the problem and enables further defining.

2.1 Disabilities

Disabilities is a broad term. Hence, it can be hard to define what exactly a disability is. Therefore, this subchapter focuses on clarifying what the meaning of disabilities is within literature and throughout this thesis and what kinds of categorisations of disabilities are made in practice.

Research questions
What are disabilities?
What types of disabilities are there?

The definition
The word disability dates back to the 16th century. It is an overarching term used to describe any type of impairment that limits one's functioning in the long term. Often, disabilities also hinder people's participation in society. (United Nations, 2006; WHO, 2001; Oxford English Dictionary, n.d.).

Categorisations
Worldwide, there are a lot of different disabilities, making it difficult to categorise them. In the report of (On)beperkt sportief 2013 (Anneke von Heijden et al., 2013) a categorisation is introduced based on the International Classification of Functioning, Disability and Health (ICF) of the WHO (2001) and Helsinga, Schellen and Verkuyl's book called 'Wij zijn niet van steen' (1972) (Figure 4). This categorisation is also in line with the categorisation used in reports of the Dutch government (CBS, 2022).

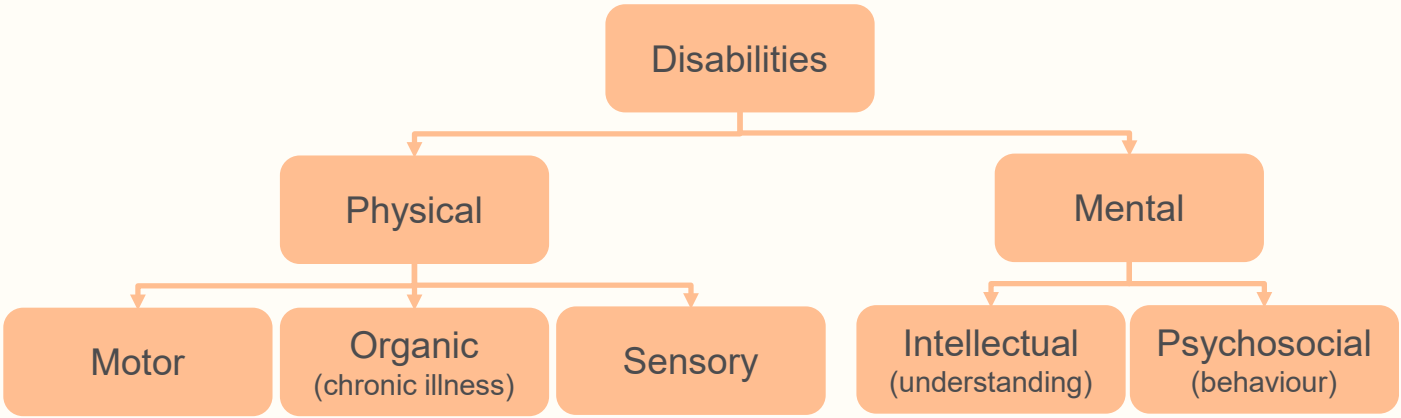


Figure 4: Categorisation of disabilities physical and mental (Anneke von Heijden et al., 2013)

Physical disabilities
The category of physical disabilities consists of all disabilities related to the physical capabilities of the human body.

First of all, there is the subcategory of motor disability. As the name suggests, impairments of this subcategory influence an individual's motor skills, thus hindering an individual's ability to move and use parts of their body. This can be caused by, as well as influence, a person's bones, muscles, joints and central nervous system. A wide range of disabilities fall into this category. Examples are paralysis, progressive muscle diseases, amputated limbs and childhood arthritis. Individuals with a disability in this category can use aids such as a wheelchair (Oregon Secretary of State, n.d.; Spittle, FitzGerald, Mentiplay, Williams & Licari, 2018; University of Melbourne, n.d.).

Organic disability is a category of impairments that can be identified by a decrease or loss of functionality of one or more body systems. Thus, organic disabilities are related to the functioning of a person's organs. Organic disabilities are almost always caused by chronic diseases and have no outlook on recovery. Common examples are asthma or vascular diseases (COCEMFE, 2022; von Heijden et al., 2013).

Sensory disabilities affect one or more of the five human senses (taste, smell, vision, hearing and touch). In the case of a sensory impairment, an individual has often lost (a part of) the function of a sense. Common examples are blindness and deafness. However, sensory processing difficulties also fall into this category (e.g. someone with Autism can be oversensitive to textures and noise) (Buckinghamshire Council, n.d.; HandicapNL, n.d.-a).

Mental disabilities
The category of mental disabilities relates to impairments of the mind, as the name suggests. The first subcategory is intellectual disabilities, which relate to a lowered IQ (max 70) and, therefore, lowered understanding capabilities. This category works with a severity level system based on IQ that ranges from mild (IQ: 50-69) to profound (IQ: <20). A typical example of an intellectual disability is the syndrome of Down (Kishore, Udipi & Seshadri, 2019; Special Olympics, n.d.).

The second subcategory is psychosocial/psychological disabilities, which relate to behavioural capabilities such as expressing emotions, social skills, etc. Disabilities of this subcategory often arise from mental health issues and the barriers PwD in this subcategory get confronted with. Examples of disabilities in this subcategory would be personality disorders and autism (HandicapNL, n.d.-b; NDIS, 2022; NSW Government, 2023).

As there is a great diversity of causes and manifestations of disabilities, there sometimes is overlap between the categories mentioned above. Besides that, people can have multiple disabilities from several of the above-mentioned categories. For example, certain progressive muscle diseases are often paired with autism (Passos-Bueno, Costa & Zatz, 2022), thus covering the categories of motor and psychosocial/psychological disabilities. Furthermore, certain organic disabilities (e.g. Diabetes) can result in motor disabilities as well as sensory disabilities (e.g. reduced sense of touch & loss of motor function) (Ferris, Inglis, Madden & Boyd, 2020). Lastly, there is also a term called 'ernstig meervoudige beperking', also known as EMB in Dutch, which translates to 'severe multiple impairments'. This is also an example of a combination of several impairments such as motor, intellectual and sensory impairments (HandicapNL, n.d.-a; Michigan Alliance for Families, n.d.).

Visible and invisible

Another way to categorise disabilities is by their visibility: visible and invisible disabilities (Figure 5 and 6).

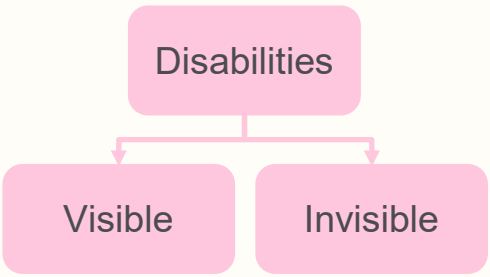


Figure 5: Categorisation of disabilities visible and invisible (based on Sahu & Sahu, 2015; 24 hour home care, n.d.)

When people are asked to think of disabilities, they often think of visual disabilities or things that visualise disabilities. Examples are a missing or deformed limb, a wheelchair, or a guide stick (Sahu & Sahu, 2015; Ysasi, Becton & Chen, 2018). These are things that allow us to identify a person with a disability with the naked eye, and thus these disabilities are referred to as visible disabilities. However, many disabilities are not visible at first glance. For example, the disabilities of the aforementioned category of psychosocial disabilities. These rarely have visible characteristics and are thus not identifiable with the naked eye (Sahu & Sahu, 2015; 24 hour home care, n.d.). Therefore, these types of disabilities are referred to as invisible disabilities. As a result, the spectrum of disabilities is often wider than people assume.

Within the invisible disabilities category, there are also learning disabilities that do not influence the play capabilities of the child, e.g., dyslexia (Goodwin, 2020). For literature, these forms of invisible disabilities are of interest as they influence the educational needs and educational acceptance of children. However, within this thesis, these kinds of learning disabilities are not included in the category of invisible disabilities as they have little to no influence outside of the educational context.

Figure 6: Visible vs invisible disabilities (Williams, 2021).

Conclusions

What are disabilities?

Disabilities are defined in the literature, and thus also in this thesis, as impairments that hinder an individual's functioning in the long term. This hinders the individual's participation in society.

What types of disabilities are there?

Disabilities can be categorised as physical and mental disabilities or visible and invisible disabilities. There is a lot of overlap in the physical and mental categorisation system, as a lot of disabilities go hand in hand or fall into multiple categories. Thus, this thesis follows the categorisation of visible and invisible disabilities, as this categorisation provides a clearer distinction between PwD.

2.2 Perception and Barriers

This subchapter describes how PwD are currently perceived in western world societies and what barriers they face in their day to day life. This subchapter also explores if there is a difference within the barriers People with visible disabilities (PwVD) and People with invisible disabilities (PwID) face.

Research questions

How do people in western societies currently perceive disabilities?
What barriers do PwD encounter?
Is there a difference between visible and invisible disabilities?

There are two main models through which disabilities can be observed (Goering, 2015). These two models are visualised in Figure 7 based on the below mentioned information. The first is the medical model of disability, this model focuses on the idea of something being wrong with a person with a disability and perceives an impairment as something in need of fixing (Engel, 1977; Kaplan, 2002). As a result, the impairment is seen as the cause of the disadvantages they experience (Daitz, 1965; Andrews, 2017).

However, to counter this model, the social model of disability was developed and introduced in 1983 (Oliver, 2004). This model makes a distinction between the terms disability or impairment and the term disabled. Whereas the previous model refers to the disabled as someone with an impairment in need of fixing as the impairment is the restricting and disabling factor. This model refers to the disabled as someone with an impairment who is disabled by the restrictions laid upon them due to the way society is organized (Goering, 2015; Oliver, 1990; Oliver, 1996).

The social model is developed by PwD and clarifies that impairments do not necessarily make you 'disabled' or are 'bad things'. Living with an impairment is often a neutral state of being for people born with an impairment. It is considered normal for them and the only thing that differs for them is the way they do things, not what or who they are (Kent, 2000; Young, 2014). They are rarely burdened by their impairment but more often so by barriers created by society (Goering, 2015).

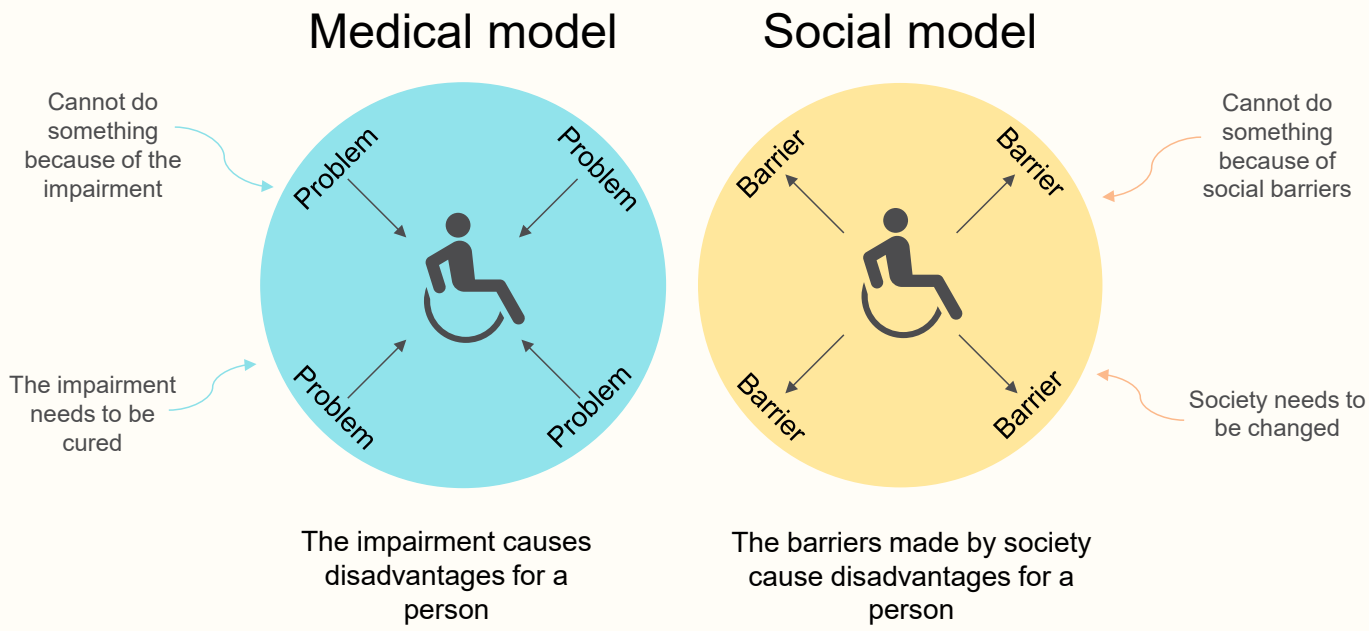


Figure 7: Medical model vs social model

The social model shines a light on these barriers. The barriers can be divided into three types (GSDRC, 2015; Oliver, 1996). The first type are the environmental barriers, also referred to as physical barriers (Bloemen et al., 2021; van Engelen et al., 2021). The environmental barriers are connected to physical things such as accessibility or the lack of services, e.g. no subtitles for auditive impaired people or no braille or audiobooks for visually impaired people (Giraldo-Rodriguez et al., 2019). The second type are the institutional barriers. These are related to institutional opportunities and legislation, e.g. policies that discriminate against people with impairments (Wapling & Downie, 2012). Lastly, there are the attitudinal barriers, also referred to as social barriers. These barriers are related to people's attitudes towards people with impairments. As a result, these barriers are highly influenced by stigma and stereotypes (Bloemen et al., 2021; Sahu & Sahu, 2015; van Engelen et al., 2021).

All these types of barriers influence each other, however, it is argued that the attitudinal barriers are the most important as they have the largest influence on the other types of barriers. The reason for this is, that attitudinal barriers form a foundation for the other types of barriers (CDC, 2020; Knott, 2023). The previously mentioned information is summarised in Figure 8.

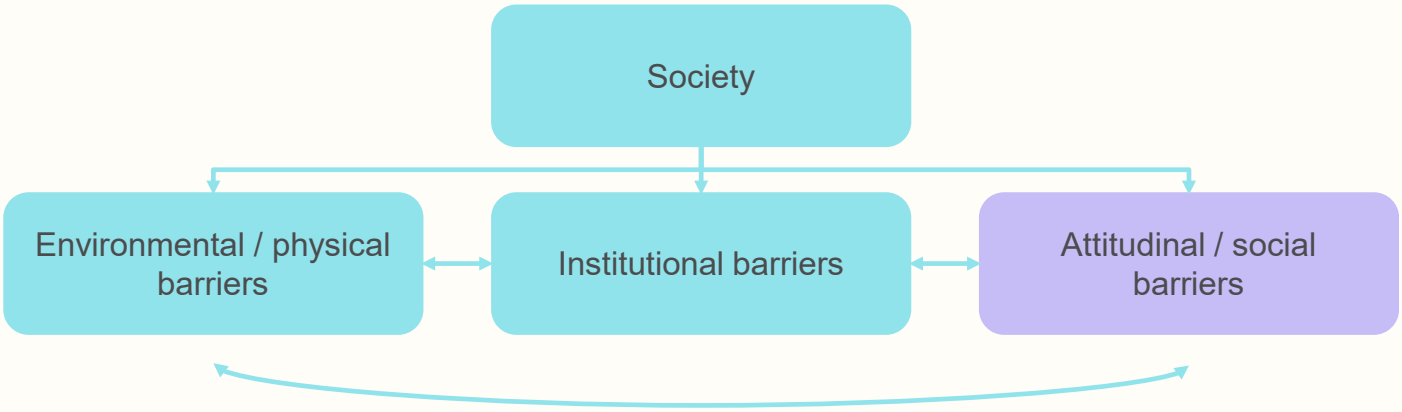


Figure 8: Types of barriers PwD experience

Common types of attitudinal barriers
There are 5 attitudinal barriers that are highlighted in literature: Pity, admiration, spread phenomenon, aversion and fear.

Pity is one of the most common emotions felt by non-impaired people when encountering a person with a visible impairment. Shakespeare (1994) argues that impaired people are viewed as passive and incapable people and are therefore seen as objects of pity. This is supported by Allan and Ware (2003) describing how disabilities are described using words that connote pity (e.g. limitation, dependency etc.). Silvers, Wasserman & Mahowald (1998) contribute to this as they show how PwD are seen as weak and vulnerable.

Admiration is a tricky attitudinal barrier, as it is considered to be favourable for a PwD. However, this is not the case. Admiration, otherwise known as hero worship or heroism, refers to the phenomenon of people praising people with impairments for performing everyday activities. It is based on low expectations for PwD and they are admired for overcoming their 'disability'. Therefore PwD are easily considered as exceptional without achieving anything out of the ordinary. This causes PwD to be discouraged. As admiration is not considered to be harmful by PwTD, the attitude of admiration is often adopted and happens even though it is very disabling and upsets PwD (Coleridge, 1993; Mogendorff, 2016; Young, 2014).

The spread phenomenon refers to the phenomenon of people assuming that a PwD is also mentally impaired, even if it is a physical impairment (Sahu & Sahu, 2015; Wright, 1983, Ysasi, Becton & Chen, 2018).

Aversion can be caused by different factors. One factor is aesthetic aversion, which is aversion caused by the physical appearance of a PwVD (Livneh, 1982; Ysasi, Becton & Chen, 2018).

The last attitudinal barrier is fear. This consists of fear of doing something wrong, e.g. offending a PwD (Sahu & Sahu, 2015). But it also covers fear caused by physical impairments as they are seen as a reminder of death (Livneh, 1982). Figure 9 summarises the above-mentioned information.

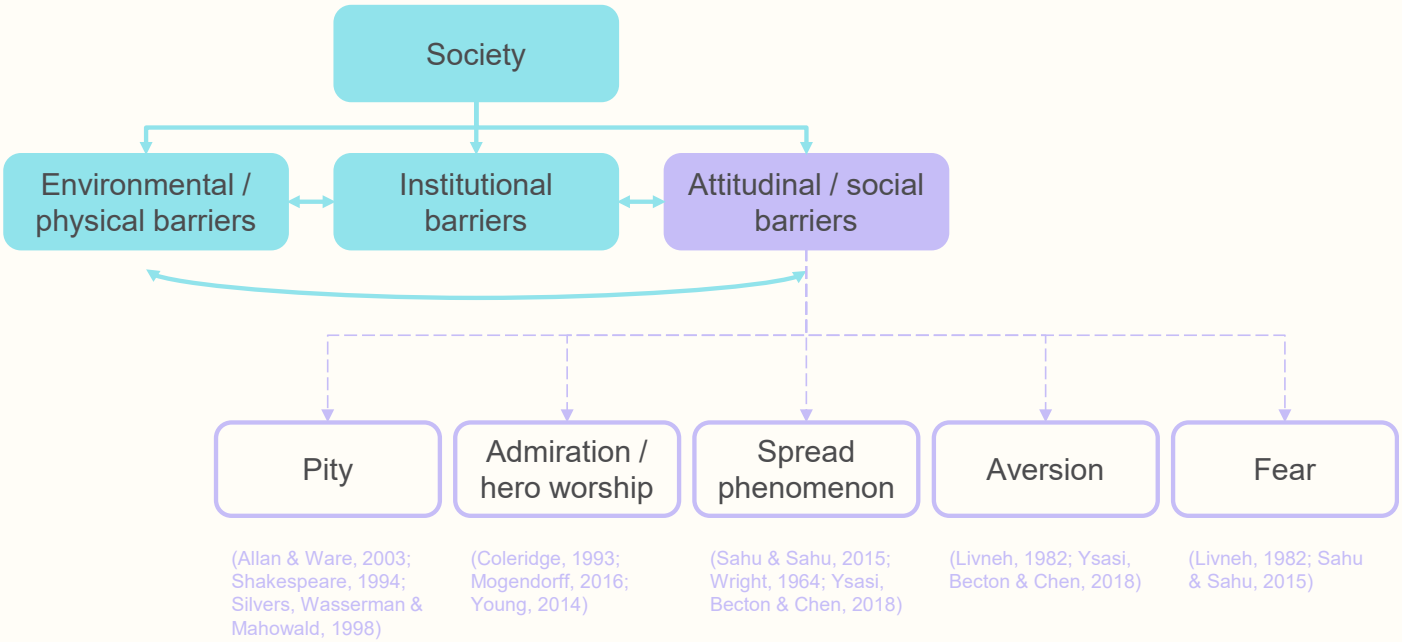


Figure 9: Common attitudinal barriers

Visible vs Invisible

People with visible disabilities are treated differently from people with invisible disabilities. Both groups encounter barriers, however, some barriers take on a different form. Figure 10 visualises the below-mentioned points.

Society has different expectations of and views on PwVD and PwID. PwID are compared to the ‘normal’ norm. This causes a lot of incomprehension and as a result PwID have to fight to get their impairment recognised and understood (Goodwin, 2020; Oslund, 2013). This also causes parents of children with invisible impairments to be subjected to the stigma of bad parenting as their children do not live up to other parent’s ‘normal’ expectations (Francis, 2012).

Whereas PwVD are compared to the stigmas and stereotypes of disabilities. Causing them to be considered less competent and intellectually capable, but also as weak (Marini, 2011; Silvers, Wasserman & Mahowald, 1998; Wright, 1964). As a result, PwVD have to fight to get their capabilities recognised (Goodwin, 2020; Oslund, 2013). On top of that, they can be exposed to aversion based on their physical appearance (Livneh, 1982).

Lastly, PwID frequently conceal their impairment to fit in or avoid stigmatisation and harmful attitudes (Lenhardt, 2004). This is something PwVD are unable to do, causing them to always be exposed to possible stigmatisation and harmful attitudes.

Invisible impairments

- Compared to the ‘normal’ norm
- Have to fight to get impairment recognised
- PCwD subjected to stigma of bad parenting
- Impairment can be concealed

Visible impairments

- Compared to stigmas and stereotypes of disabilities
- Have to fight to get capabilities recognised
- Can be exposed to aversion
- Impairment cannot be concealed

Figure 10: Barriers faced by PwVD and PwID.

Conclusions

How do people from western countries currently perceive disabilities?

PwD used to be perceived via the medical model where the impairment was seen as the restricting factor. In literature, the view has shifted towards the social model where the barriers laid on PwD by society are the restricting factors. The social model is currently the best representation of reality and is therefore used as a guideline for this thesis.

What barriers do PwD encounter?

PwD encounter 3 different types of barriers: Environmental, institutional and attitudinal. It was found that attitudinal barriers are the most influential barriers and therefore working on decreasing this type of barrier has the most impact on PwD’s lives.

Is there a difference between visible and invisible disabilities?

PwVD and PwID face different barriers. PwID can hide their impairment preventing them from being exposed to a certain amount of barriers. Moreover, the most common attitudinal barriers mainly apply to PwVD.

2.3 Attitudes

In the previous chapter, attitudinal barriers are discussed and turned out to be most influential on PwD's lives. It is also known that, attitudinal barriers are caused by people's attitudes. This poses the question of what an attitude is, how it is formed and how it can be influenced.

Research questions
What are attitudes and how are they formed?
How do attitudes influence behaviour?

Attitude definition
An Attitude is a feeling or opinion about an attitude object showing either some degree of favour or disfavour (Cambridge Dictionary, n.d.; APA Dictionary of Psychology, 2018). An attitude object can be anything, it can be concrete such as an actual object or a person or vague such as a system or a concept (e.g. communism) (Psychology Dictionary, n.d.).

Attitude model / Attitude contents
The field of psychology has a vast interest in attitudes, their formation and how they can be influenced. However, there is not one single model that is fully proven. Yet, there is one model describing attitude formation that shows the most potential and is thus the most discussed (Ajzen, 1989; Bakanauskas, Kondrontienė & Puksas, 2020). This model is the Tri-component model of attitude (also known as the multi-component model or ABC model of attitude)(Allport, 1954).

The Tri-component model of attitude describes attitudes to be built up out of 3 different components: Cognition, Affection and Conation (Figure 11).

The first component, cognition, refers to a person's knowledge, beliefs and perceptions about the attitude object. This can be based on the direct experience of a person with the attitude object or indirect experience. Indirect experience would be based on stigmas and stereotypes, media representation or stories people tell you (Allport, 1954; Fazio & Roskos-Ewoldsen, 2005).

The second component, affection, refers to people's affective reactions and thus the emotions and feelings a person has toward the attitude object. However, this component can also be influenced by a person's mood (Hilgard, 1980).

The last component, conation, refers to the tendency a person has to perform a certain behaviour towards the attitude object. For example, if you see something you do not like there might be a tendency to turn away or stay away (Eagly & Chaiken, 1998; Mclead, 2023).

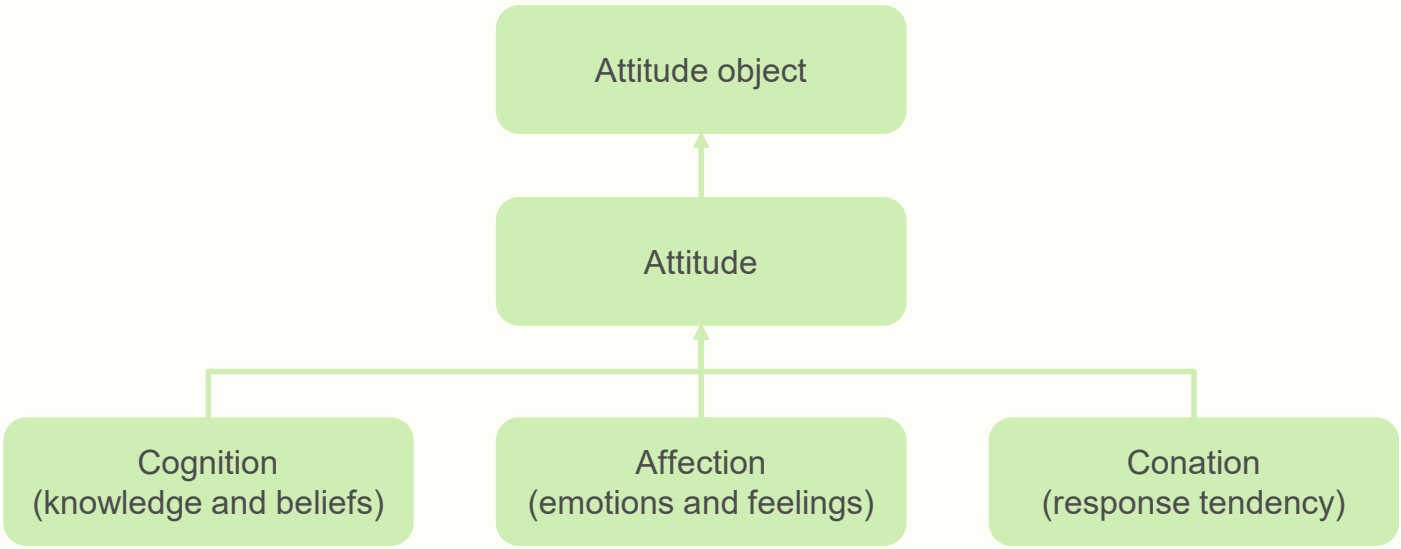


Figure 11: Tri-component model of attitude (based on Ajzen, 1989; Cambridge Dictionary, n.d.).

The attitude object can also influence one's attitude and attitude components. As well as attitude components having the possibility of influencing each other (Albarracin, Johnson & Zanna, 2005). This information changes the model from Figure 11 to Figure 12.

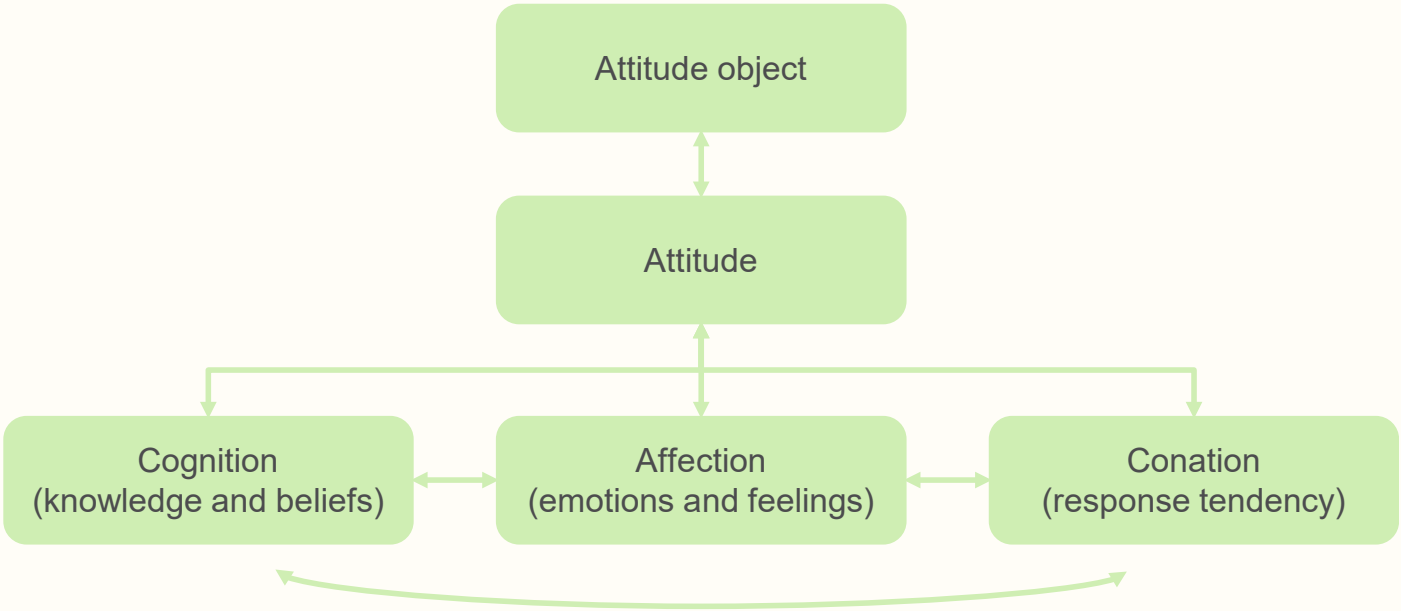


Figure 12: All attitude contents can influence each other (based on Albarracin, Johnson & Zanna, 2005)

In the previous subchapter, the most common attitudinal barriers PwD experience were defined. These attitudinal barriers can be decomposed to get a better understanding of which attitude constructs these barriers originate from. Figure 13 gives an overview of this.

The attitudinal barriers of pity, admiration/hero worship and fear seem to find their origin in the affection component as they are feelings people experience. However, when taking a better look at these barriers, it can be seen that the affection component is influenced by the cognition component and thus, these attitudinal barriers actually originate from the cognition component. Causing 4 of the 5 most common attitudinal barriers to find their origin in the component of cognition.

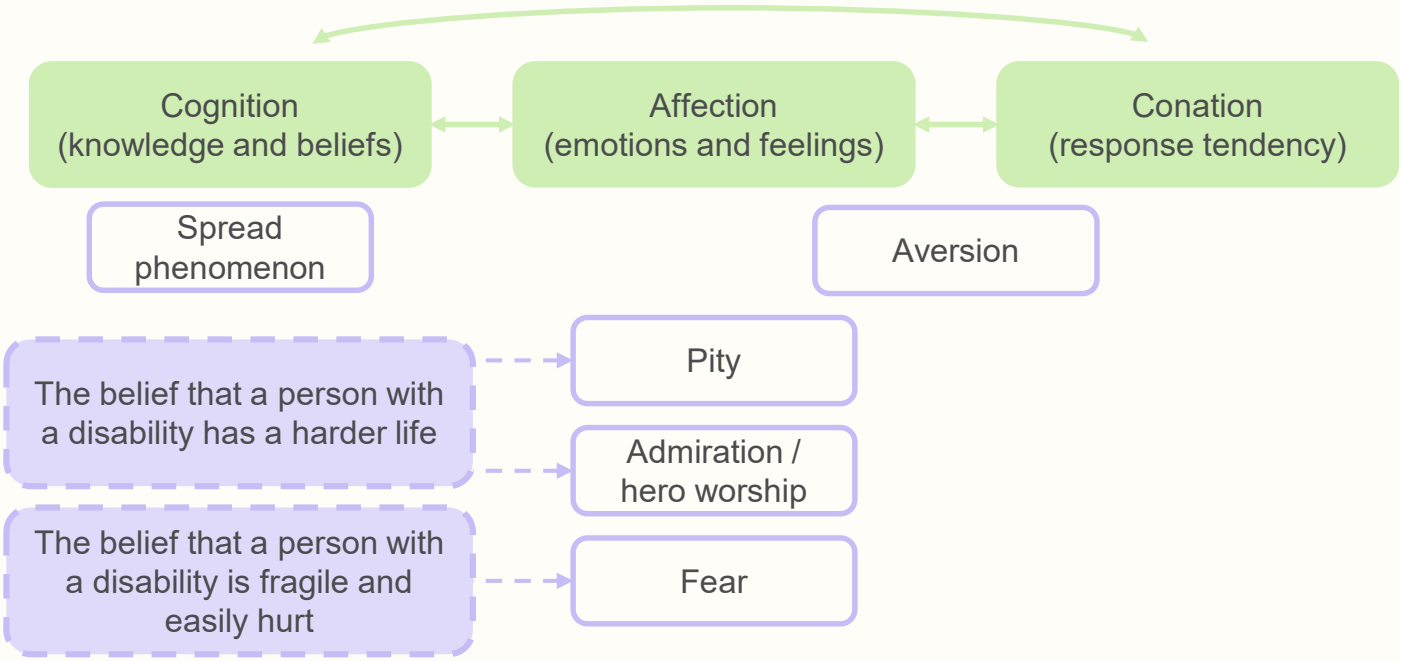


Figure 13: Attitude formation most common attitudinal barriers (based on Figures 12 and 9)

Attitude structure

The attitude structure is the overall evaluation of the attitude object. As mentioned before this is either some degree of favour or disfavour. First, this was seen as a one-dimensional scale where an attitude was either positive, neutral or negative. However, later on, the two-dimensional view was introduced (Figure 14) (Cacioppo, Gardner & Berntson, 1997). This model put the negative and positive elements that built up an attitude on two different axes. This shows that attitudes can be more complex as attitude components might not all express the same sentiment towards the attitude object (Maio & Haddock, 2007). For example, the cognition and affection components might be positive while the conation component might be negative. This can lead to conflicting evaluations of the attitude object and thus a conflicted attitude. This concept is referred to as intercomponent ambivalence (MacDonald & Zanna, 1998; Maio, Esses & Bell, 2000). As a result, attitude structure can now be positive, neutral, negative and ambivalent.

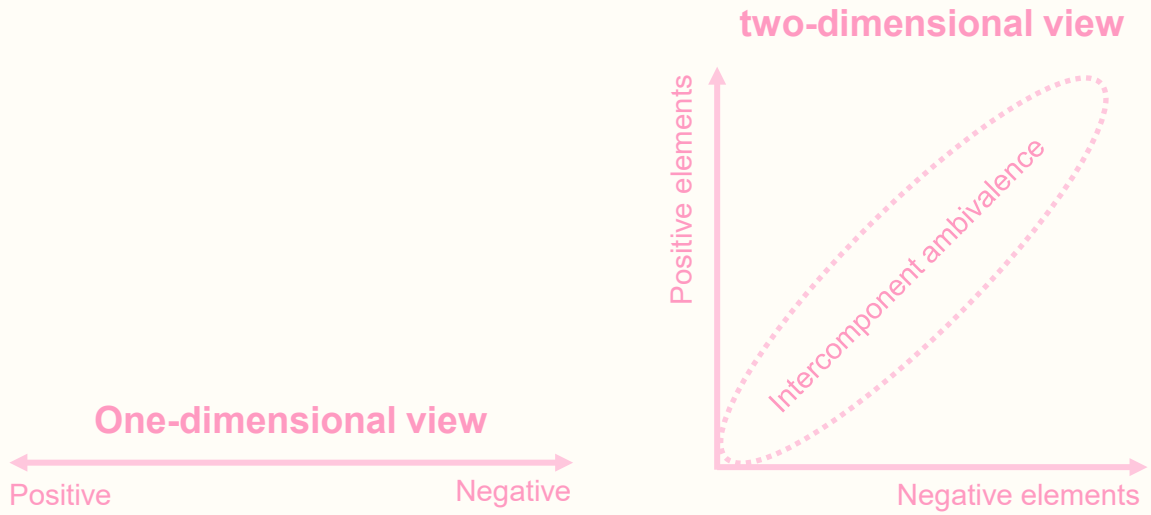


Figure 14: One- and two-dimensional view of attitude structure (Higgins & Kruglanski, 1996)

This is important to note as there is a chance PCwTD have an ambivalent attitude towards CwD. An example would be: someone might generally have a positive attitude towards children but might have a negative attitude towards disabilities = A person with a partially conflicting and thus ambivalent attitude towards CwD.

Attitude as a predictor for behaviour

Behaviour can be out of line with someone's attitude. As a result, someone's attitude can be positive while their behaviour is negative (Albarracin, Johnson & Zenna, 2005). The chance of this happening increases when an attitude is ambivalent as the attitudes of PCwTD might be. As a result, it is important to know how attitude can predict behaviour.

The Principle Of Consistency describes that people's attitudes are consistent with their behaviour as it is assumed that humans are rational beings (Kenrick, Neuberg & Cialdini, 2010). However, it was found that this is often not the case (LaPiere, 1934; Kutner, Wilkins, & Yarrow, 1952). For example ambivalent attitudes make it difficult to predict behaviour (Conner, Wilding, van Harreveld & Dalege, 2021; Maio, Esses & Bell, 2000). Or when time pressure is added (Fazio & Roskos-Ewoldsen, 2005). As described above, PCwTD might have ambivalent attitudes and as a result, it is important to know what can increase and decrease the attitude behaviour consistency to help PCwTD also exhibit positive behaviour when they have a positive attitude towards CwD. To predict behaviour, attention should be paid to attitude strength. Attitude strength is determined by the perceived importance or personal relevance and a person's knowledge on the attitude object.

The perceived importance and personal value are based on, as the name suggests, an individuals values, perceived (subjective) norms and their self-interest. These factors can be found in several theories and models regarding behaviour (e.g. Theory of reasoned action and Theory of planned behaviour) (Montaño & Kasprzyk, 2008).

The knowledge aspect is based on an individual's knowledge of the attitude object, once again relating to the cognition component. As previously mentioned in this subchapter, attitudes can be based on direct experience (e.g. contact with CwD) or indirect experience (e.g. hearing about CwD from someone else). Attitudes formed based on direct experience result in more attitude behaviour consistency (Regan & Fazio, 1977; Songer-Nocks 1976). Direct experience also positively influences the accessible attitude which helps people to make decisions faster and exhibit behaviour that is more in line with their attitude even under time pressure (Fazio & Roskos-ewoldsen, 2005).

Conclusions

What are attitudes?

An attitude is a judgement or evaluation made of an attitude object by a person often showing either some degree of favour or disfavour towards the attitude object. In some cases an attitude can also be ambivalent when there are favourable and disfavourable elements to an attitude. This is most likely the case with PCwTD's attitudes towards CwD.

How are attitudes formed?

Attitudes consist of 3 main components: cognition, affection and conation. Cognition is the most important factor of these 3, as 4 of the 5 most common attitudinal barriers find their origin here. Therefore, focusing on bringing change to this component might have the largest influence on the attitudinal barriers for CwD.

How do attitudes influence behaviour?

Behaviour is not always inline with someone's attitude. Especially in the case of an ambivalent attitude or time pressure. The attitude-behaviour consistency can be increased in several ways: creating direct experiences, increasing perceived value, changing perceived norms and increasing self interest. From these ways, direct experiences have a large influence on the cognition component. Thus, direct experience is the most useful way to strengthen the accessible attitude.

2.4 Adult influence

All the previously examined literature in Chapter 2 focusses on PwD and attitudes in a very broad context. As a result, little is known yet, in this thesis, about PCwD and PCwTD within the Netherlands. Therefore, this subchapter researches what kinds of PCwD and PCwTD there are in the Netherlands and what kind of influence adults have on the barriers CwD experience.

Research questions

What general kinds of PCwD and PCwTD are there in the Netherlands?
What does the context of Dutch CwD look like and what influence do Dutch adults have on the barriers CwD experience?

Method

To find out what is needed for inclusive play according to adult stakeholders, the consortium conducted 4 generative focus groups with 10 adult stakeholders each. During the focus groups, among others, barriers and opportunities for inclusive play were discussed. Each focus group took approximately 2 hours and consisted of PCwD, PCwTD, experts by experience, inclusive playground managers and physio- and ergo therapists.

The transcripts of the focus groups performed by the consortium and the topic list in Appendix B were used to create statement cards. The topic list is broader than the research question indicates to help define barriers, opportunities and parts of the knowledge gap between PCwD and PCwTD that might be part of tacit knowledge or only become evident when looked at in the broader context. While also leaving room to find other relevant insights.

The statement cards were clustered and used for qualitative analysis following the procedure of context mapping (van Boeijen, Daalhuizen & Zijlstra, 2020) (Figure 15). The qualitative analysis following the procedure of context mapping provides insights in the connections between PCwD, PCwTD, CwD and CwTD. On top of that, this research helps to get a better understanding of the context and how the barriers function in real life.

The Consortium made (a first version of) knowledge cards to make the found knowledge of the samen spelen project discussable. One of these cards indicates the difference in character, beliefs and competencies of parents. This knowledge card, the information gained from the focus groups performed by the consortium and my analysis are compared and grouped on similarities and differences. These groups are then used to create personas of the different types of parents to gain a better understanding of who they are, what they value and what motivates them.

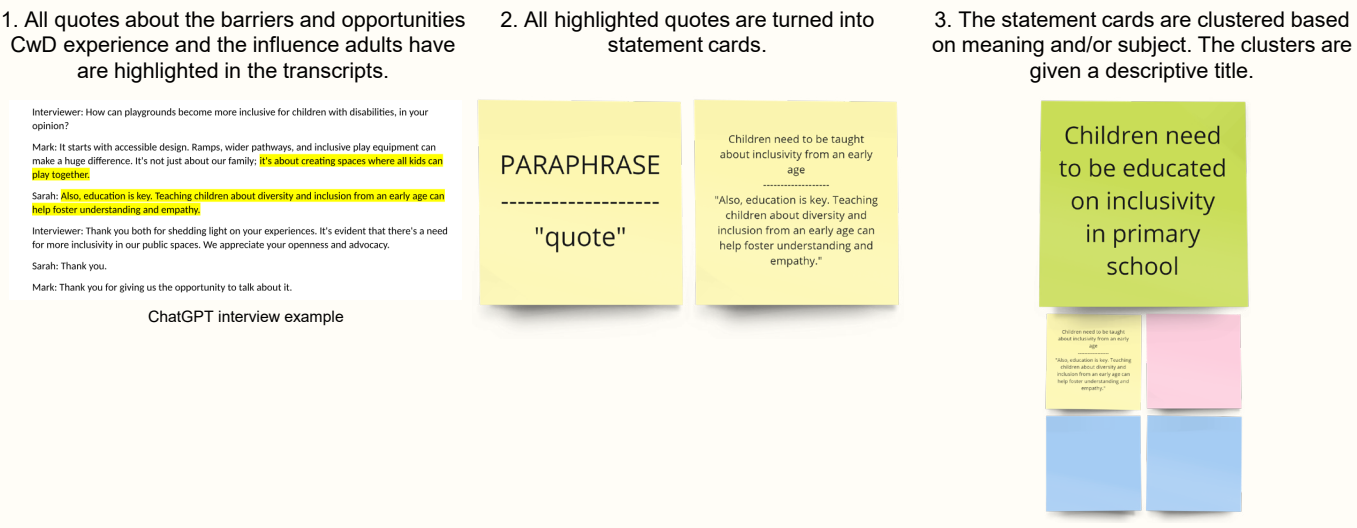


Figure 15a: Example of context mapping focus groups

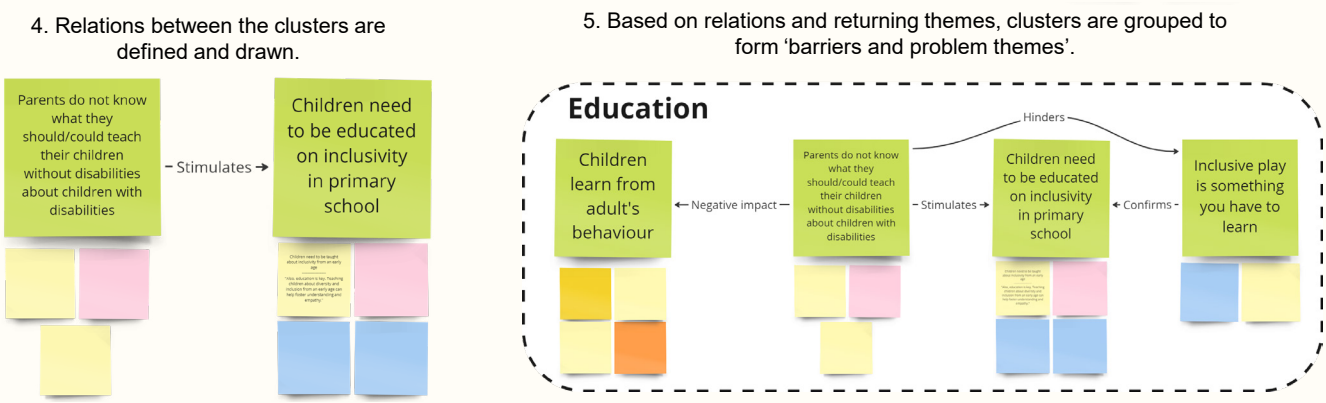


Figure 15b: Example of context mapping focus groups

Results

Qualitative analysis following the procedure of context mapping

The generative focus group transcripts were analysed following the description above (Figure 16). The relations between the clusters can be found in Appendix C.

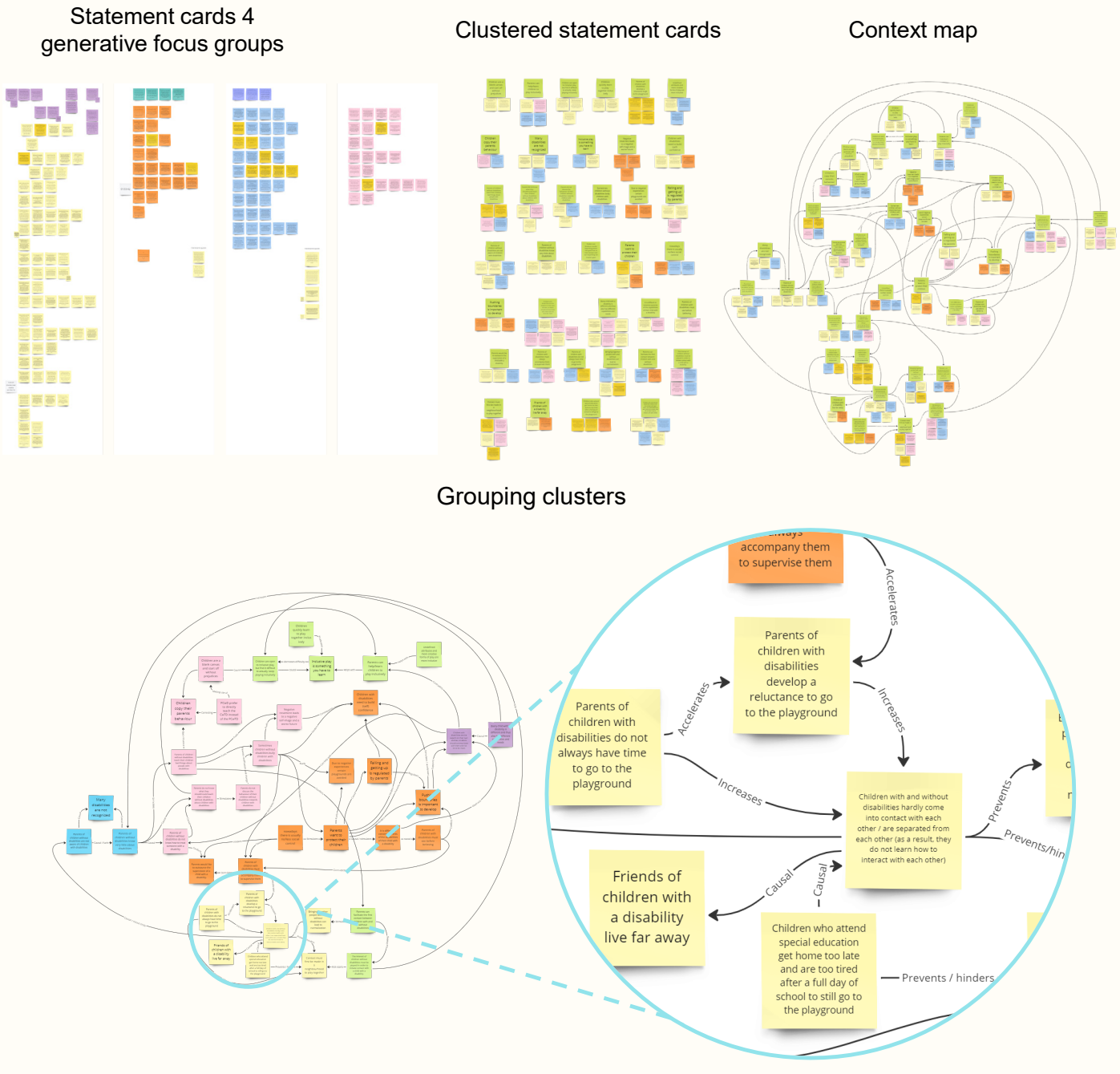


Figure 16: Qualitative analysis of the generative focus group transcripts

Through the grouping of clusters several problem themes and barriers were found (see Figure 17). As well as insights that can function as design opportunities (Figure 18).

Control and safety

PCwD are afraid of their child experiencing negative things (e.g. falling or being bullied).

* *PCwD have a need for safety that often results in overprotection. This is also an increasing trend among PCwTD.*

* *Parental fear and control prevent CwD from pushing the boundaries and fully developing.*

* *PCwD supervise their children at the playground until a later age than PCwTD.*

Generally speaking, nowadays there is less social control, stimulating the need for personal supervision.

Abilities and needs

* *Every CwD is different and correspondingly all CwD have other capabilities and needs.*

Adults often think and make choices for CwD even though CwD are the people who know best what they are capable of and what they need.

Rift and separation

* *CwD and CwTD rarely come into contact with each other, preventing normalization.*
  - Inclusive playgrounds contribute to this rift.

* *When CwD attend special education they lose the connection to their neighbourhood.*

Time, boredom and past negative experiences cause reluctance for PCwD to visit playgrounds with their child.

Inclusive play

CwTD and CwD can find it difficult to come up with ways for inclusive play.

CwTD are focused on themselves during play and thus easily forget that a CwD might not be able to participate.

* *CwTD can learn to play inclusively but often require adult guidance to do so.*

Disability recognition

PCwTD have too little knowledge to recognize disabilities that are not directly visible.

Attitudes

PCwTD are unaware of CwD and do not know how to treat them, causing for example clumsiness and awkwardness.

* *PCwTD know very little about CwD causing them to (accidentally) teach their children bad things about CwD. This also prevents them from properly correcting CwTD's incorrect behaviour.*

Children copy their parents' attitudes and behaviours as they start as a blank canvas.

* *Italic = most important insights*

Figure 17: Barriers and problem themes involving adults

Opportunities

PCwD and adults with affinity with CwD deploy several tactics to stimulate and/or facilitate inclusive play.

PCwTD can learn through PCwD's explanations about CwD to CwTD.

Figure 18: Design opportunities found during the focus group analysis

Based on the knowledge card, overall knowledge shared in the focus groups of the consortium and the characteristics of all the participating PCwD and PCwTD (Figure 19), the personas in Figure 20 were created.

Different parental behaviours were described and explained. From this, things they value when CwD and CwTD are playing outside, could be derived, as well as the fundamental need(s) they value most when at a playground with CwD and CwTD. These needs are based on the thirteen fundamental needs for human-centered design (Desmet & Fokkinga, 2020).

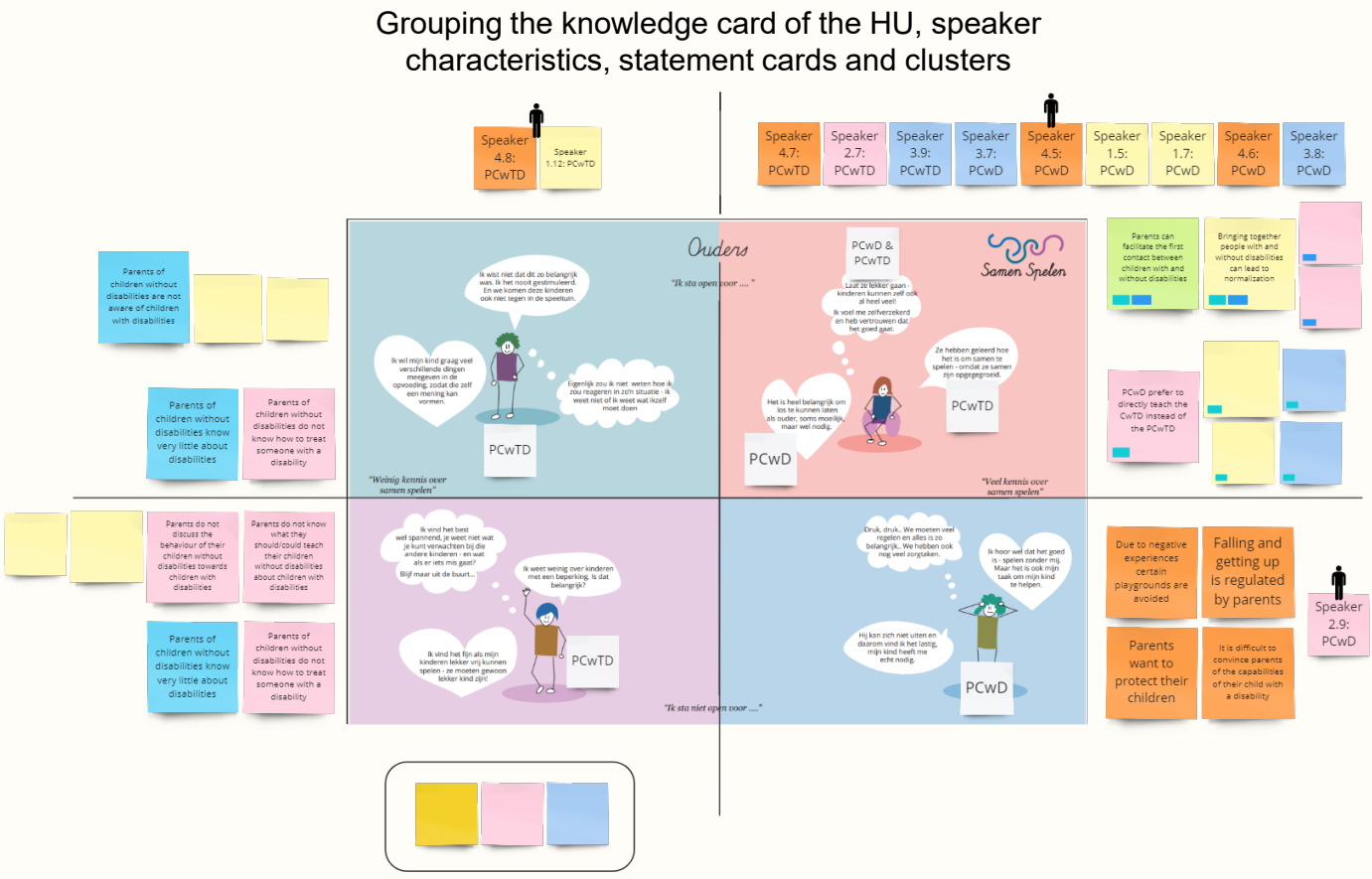


Figure 19: Gathering of data for persona's of PCwD and PCwTD

PCwD

Kind of parent	PCwD
Attitude	Positive (strongly held)
Most prominent emotion	Worry
They value	Safety
Primary fundamental need	Security & relatedness
Vision for their children	Want to protect/shield their child(ren) from negative experiences
Future vision	Not having to worry about their child when they play outside
Behaviour	Overprotective
Quote	"He is unable to express himself and that is why I find it difficult, my child really needs me."

PCwD/PCwTD

Kind of parent	PCwD and PCwTD who have a lot of affinity with CwD
Attitude	Positive (strongly held)
Most prominent emotion	Neutral
They value	Awareness
Primary fundamental need	Impact and morality
Vision for their children	Want CwD to be able to freely play with CwTD
Future vision	Normalisation of disabilities
Behaviour	Openminded
Quote	PCwD: "I ask CwTD to help my CwD when playing to make the CwTD feel important." PCwTD: "They have learned what it's like to play together because they grew up together."

PCwTD

Kind of parent	PCwTD who are open to but unaware of CwD
Attitude	Positive / neutral (weakly held)
Most prominent emotion	Curiosity
They value	Learning
Primary fundamental need	Morality and competence
Vision for their children	Would like to teach their CwTD many different things in parenting, so that they can form their own opinions
Future vision	A more inclusive society and learning more about disabilities
Behaviour	Awkward
Quote	"We do not meet these children at the playground. Honestly, I do not know how I would react in such a situation myself."

PCwTD

Kind of parent	PCwTD who are more ignorant of CwD
Attitude	Neutral / negative (weakly held)
Most prominent emotion	Fear
They value	Ease and freedom
Primary fundamental need	Ease and security
Vision for their children	Want their child(ren) to keep a distance from CwD
Future vision	No conflict between different groups in society
Behaviour	Avoiding
Quote	"It makes me quite tense, you don't know what to expect of those other children and what if something goes wrong? It is better to just stay away."

PCwTD

Kind of parent	PCwTD who are against CwD
Attitude	negative
Most prominent emotion	?
They value	?
Primary fundamental need	?
Vision for their children	No contact with PwD
Future vision	Full separation
Behaviour	Bullying, ignoring
Quote	"It was pretty quiet today." (only counted the CwTD in attendance)

Figure 20: Persona's PCwD and PCwTD

In Figure 20, the green persona covers PCwD as well as PCwTD who have affinity with CwD. They were combined in one persona as a lot of overlap could be seen between these two types of parents. Both perform behaviours stimulating inclusive play and care about the awareness of CwTD and PCwTD about CwD.

Based on the information of the focus groups, it became evident that there are PCwTD who have a very negative attitude towards CwD. However, little information on this group was shared during the sessions.

Conclusions

What does the context of Dutch CwD look like and what influence do Dutch adults have on the barriers CwD experience?

The context of Dutch CwD focuses around school, their family and visiting therapists and playgrounds. School and visiting therapists take up a lot of time and energy. Therefore, when CwD start to attend special education they and PCwD lose their connection to the neighbourhood. This fuels one of the main points made in the focus groups: PCwTD rarely see or meet PCwD and CwD. This causes PCwTD not to know how to behave with CwD and PCwTD not knowing how to explain to CwTD why CwD act the way they do. As a result, PCwTD's experiences with CwD are clumsy, thus providing a poor example for CwTD. Or PCwTD avoid interactions with CwD.

Focusing on the connection of PCwD and PCwTD within a neighbourhood can consequently help to reduce a part of the (knowledge) gap.

During the analysis, the clusters displayed in Figure 21 show that most (young) CwTD do not distinguish between CwD and CwTD, in contradiction to PCwTD. This finding is confirmed by a research video of the Naomi Association (2014) called the video 'the eyes of a child'. In the video PCwTD and CwTD are instructed to copy the faces made on the screen and PCwTD distinguish between PwD and PwRD (Figure 22).

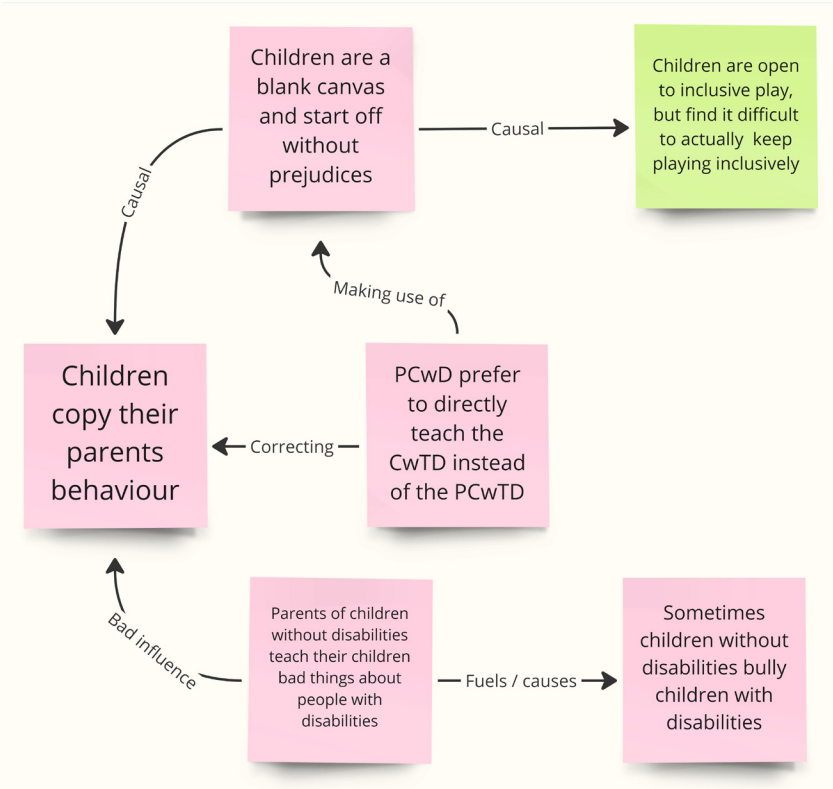


Figure 21: Clusters showing most (young) CwTD do not distinguish between CwTD and CwD while PCwTD do.

Figure 22: Only PCwTD distinguish between PwRD (top) and PwD (bottom), (Noemi association, 2014)

Even though (young) CwTD rarely discriminate against CwD, inclusive play is often still difficult for CwTD. It can be difficult to come up with inclusive ways of play as well as remaining to play inclusively. Hence, CwTD require adult guidance to learn playing inclusively. Moreover, children tend to copy their parents' behaviour, therefore, learning how to play/keep playing inclusively together could be a good opportunity for both PCwTD and CwTD.

It also became evident that not only PCwTD and CwTD (unintentionally) have a part in the barriers CwD experience, but also, unintentionally, PCwD. PCwD tend to become overprotective, preventing CwD from pushing the boundaries, and hindering CwD's development. Consequently, teaching PCwD to take a step back while catering their need for security can reduce a barrier CwD experience.

All the different barriers and problem themes provide design opportunities that can be used to define the vision in Chapter 4 and design opportunities in Chapter 5. From all the findings, the lack of direct experience between CwD & PCwD and PCwTD connects best with the findings of Chapters 2.2 and 2.3. Therefore, this provides a base for the vision to be formulated in Chapter 4.

What kinds of PCwD and PCwTD are there?

Figure 20 shows 5 types of parents, based on their behaviour and attitude towards CwD, that came forth from the focus groups. This is just a fraction of the different types of PCwD and PCwTD that exist. Nevertheless, the personas do provide insight into some of the characteristics and needs of different types of parents. Thus providing a clearer understanding of various behaviours and motivations of the most discussed parents.

From the 4 personas regarding PCwTD, only 3 have a clear part in the barriers CwD experience. According to members of the Samen spelen project, the 2 types of parents with weakly held attitudes form the largest part of the PCwTD community, thus having a part in most of the barriers. This is also in line with the PCwTD described by experts during the interviews and meetings in Chapter 3.1.

The PCwTD with a strongly held negative attitude are barely discussed during the focus groups and would therefore require more research. Furthermore, as their attitudes are strongly held, the attitudes are difficult to change (Maio & Haddock, 2007). Thus most likely requiring a different design approach from the PCwTD with weakly held attitudes. Therefore, this thesis focuses on the largest part of the PCwTD community: PCwTD with weakly held attitudes. It is, however, highly recommended to focus on PCwTD with strongly held negative attitudes in future research.

Each type of parent has different values and different motivations for their behaviour. When designing for them, it is important to be aware of this and try to facilitate their needs as much as possible. Accordingly, the needs of the top 4 personas are included in the list of requirements as wishes and requirements.

3. Field research

The literature research in Chapter 2 focuses on the theory behind the barriers experienced by CwD and how they come into existence. This chapter 3, expands on this, by focusing on the social dynamics in practice: behaviour in and around playgrounds, parental experience and the knowledge gap between PCwD and PCwTD.

3.1 Knowledge gap between PCwD and PCwTD

In Chapter 2.4 several barriers and problem themes were defined. However, it was not clear yet what the exact knowledge gap between PCwD and PCwTD is. When someone is unaware of something or is missing knowledge, it can be difficult for them to pinpoint what they do not know. Therefore, it was important to find out if (experience) experts were aware of certain kinds of information that they have but PCwTD are missing, or if there are certain mistakes that get repeated often by PCwTD.

Research questions

Are there specific types of knowledge PCwTD are missing?
Are there certain returning mistakes that are often made by PCwTD?
What do adults currently do to help people understand or connect with CwD?

Method

To find out more about the knowledge gap and reoccurring mistakes, 2 meetings about PCwD, CwD and inclusive playgrounds were attended. Additionally, non-structured interviews with 4 (experience) experts at the European Para Championships (Figure 23) were conducted. These experts are active in the fields of inclusive play and sports. During these meetings and conversations, quotes were written down of commonly made mistakes, commonly encountered problems and statements about what the (experience) experts thought were general problems of society (see Appendix D for the used topic list). These quotes were turned into statement cards and clustered (Figure 24 and Appendix E). Based on the clusters main themes could be found.

In the focus groups of the consortium in Chapter 2.4, the stakeholders mentioned different tactics they used to create understanding and stimulate the interaction between CwD and CwTD. To answer the last research question, the tactics of Chapter 2.4 and the tactics found during the research of this Chapter 3.1 are combined.

Figure 23: European Para Championships 2023

Results

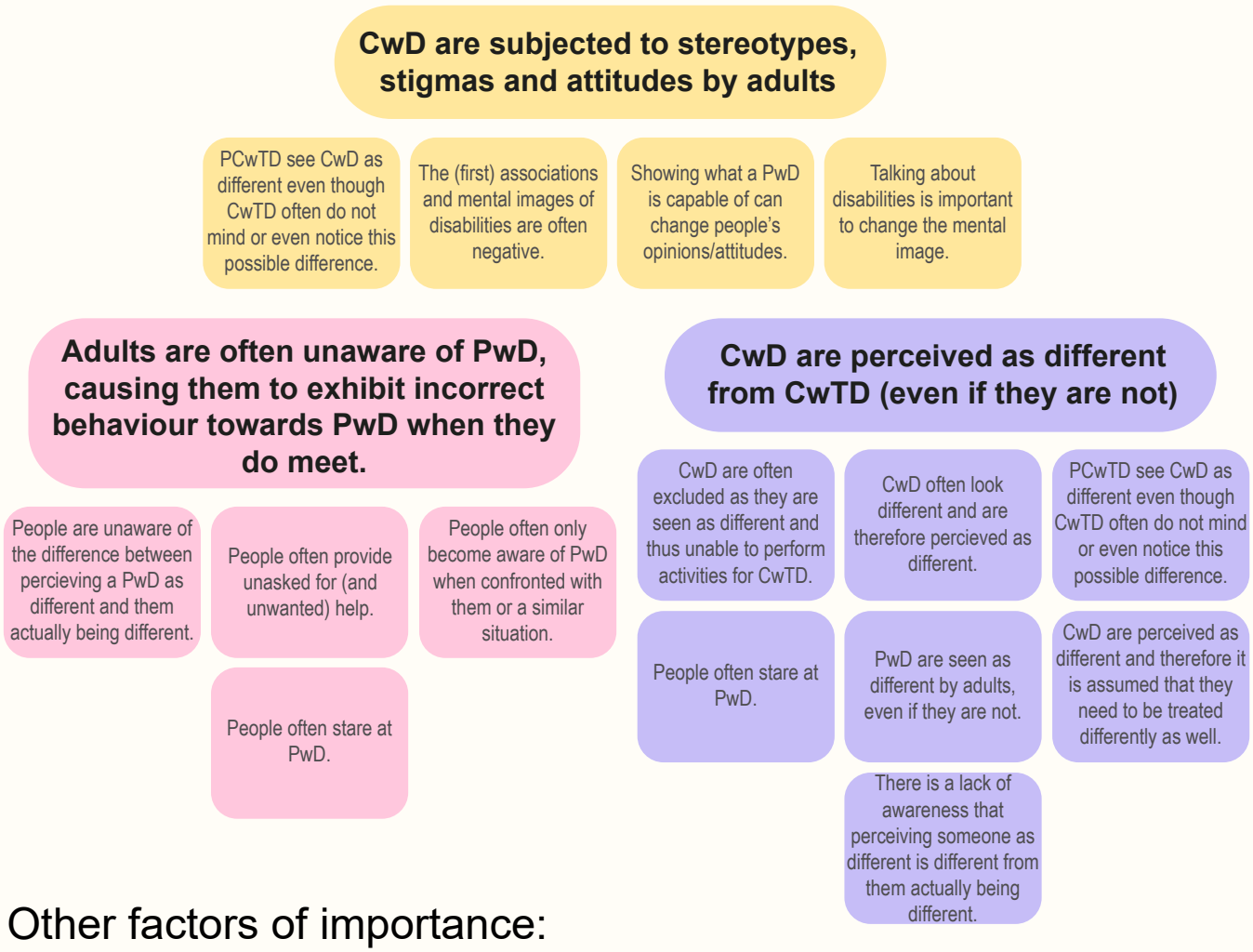
1. All quotes regarding the topic list are written down on statement cards

2. The statement cards are clustered and given descriptive titles

Figure 24: statement cards and clustering

Through the above-mentioned method, the clusters in Figure 25 were found. In this Figure, the quotes are removed from the statement cards to increase readability (see Appendix E for clusters with complete statement cards).

Missing knowledge and frequently made mistakes:



Other factors of importance:

Figure 25: Clustered statement cards

The clustered statement cards (Figure 25) provide insights in specific types of knowledge PCwTD are missing:

- PCwTD's mental images and associations with disabilities are often still negative. Talking about this or showing a CwD's capabilities can help to change these mental images and associations.
- PCwTD are often unaware of the existence of CwD, therefore, they are unaware of how to treat them, causing their behaviour to be awkward and have negative effects.
- PCwTD often perceive CwD as different, even if they are not, causing them to stare and treat CwD differently. Therefore, they are missing the understanding of how similar CwD and CwTD are or can be.

They also provided insight in commonly returning mistakes made by PCwTD:

- PCwTD stare at CwD as they perceive them as different from CwTD.
- Stereotypes and stigmas can cause PCwTD to assume all CwD should be treated the same.

Lastly, the importance of personalised approaches for CwD was stressed by the experts.

The tactics to stimulate inclusive play mentioned during this research (blue cluster in Figure 25) were compared to the tactics mentioned in the focus groups of the consortium (Bloemen et al., 2021). Figure 26 shows an overview of all found tactics. It was found that the most commonly mentioned tactics are verbal. However, certain tactics are non-verbal and stimulate inclusive play without needing explanation.

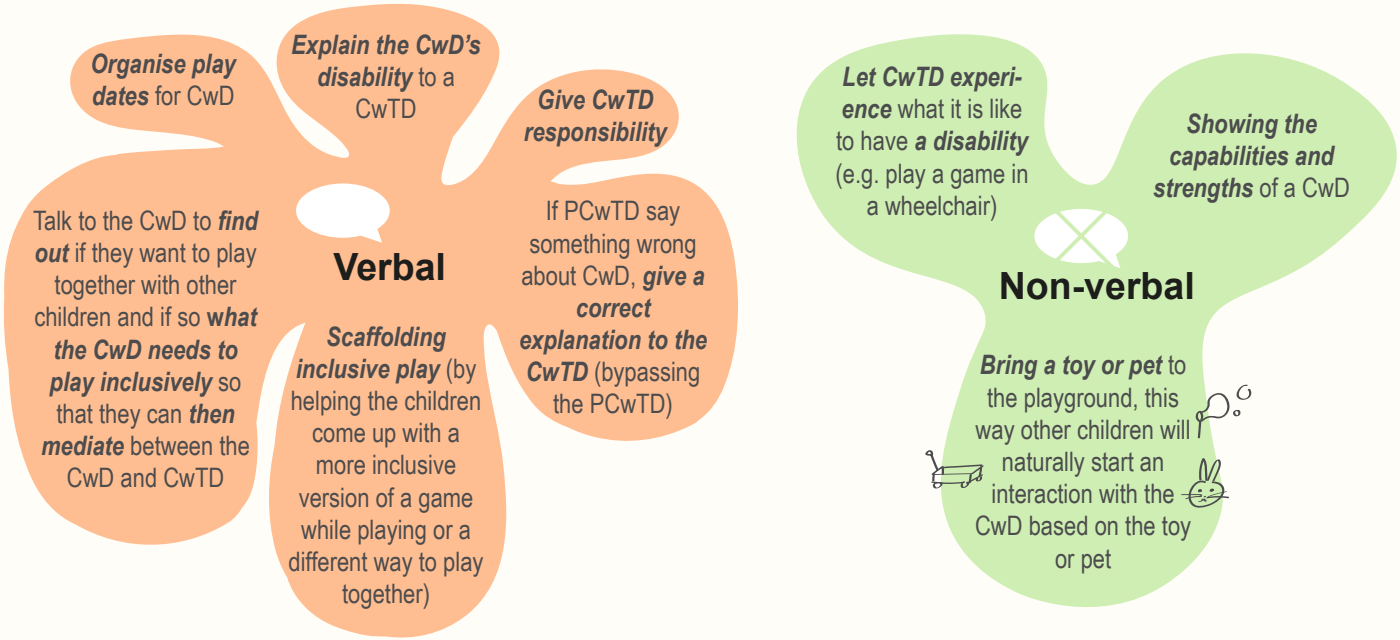


Figure 26: Tactics currently used by PCwD and experts to stimulate inclusive play.

Conclusion

Are there specific types of knowledge PCwTD are missing?
Are there certain returning mistakes that are often made by PCwTD?

Several types of missing knowledge as well as commonly made mistakes were found. The identified types of missing knowledge in Figure 26 are in line with the findings of Chapter 2.4.

From the found missing knowledge, PCwTD's most often made mistakes, as well as missing insights, revolve around seeing CwD's as different from CwTD. Because adults stare at CwD, CwTD find out that there must be a difference between them and CwD. Even though the CwTD never felt this before. On top of that, CwD are excluded from activities by adults because they are perceived as different and thus requiring different treatment. Even if this is not the case.

Therefore, the perceived difference between CwTD and CwD is one of the most important parts of the knowledge gap to take into account when ideating in Chapter 5.

An experience expert also mentioned that PCwTD are unaware of PwD until they are confronted with them or a similar situation. They often forget about the existence and needs of PwD but do show a willingness to change and help when they come into contact with PwD. Combining this insight with the insight from Chapter 2.4: 'PCwTD rarely come into contact with CwD', shows that a step towards awareness can be created through stimulating and facilitating the first direct contact between CwD, PCwD and PCwTD.

What do PCwD and experts currently do to help people understand or connect with CwD?

9 different tactics were found that can all serve as inspiration for the ideation in Chapter 5. The tactics were divided into two categories verbal and non-verbal. Adults tend to verbally help CwD connect to others and inform others about CwD's impairments. Only 3 of the identified tactics were non-verbal, nonetheless they were marked as very effective, thus forming a good addition to the verbal tactics. Therefore, putting more focus on non-verbal stimulations for inclusive play as a form of connection is preferred.

3.2 Parental behaviour

Playgrounds are natural meeting places for parents as they accompany their young children for outdoor play. However, little is known about the parental behaviour at playgrounds. Therefore, this subchapter focuses on gaining insights on parental behaviour at playgrounds.

Research question

How do parents at playgrounds interact with each other and their children?

Method

I observed the behaviour of parents at playgrounds for a minimum of 1 hour. The context of the playground (time, location, number of parents, etc.) can influence the observations. Therefore, I chose to observe playgrounds in a village, town and city, as well as different types of playgrounds on sunny and partially cloudy days with a temperature between 20 and 27 degrees (Figure 27). The observed playgrounds are listed below:

- Small neighbourhood playgrounds in a town and a city
- Larger playgrounds and playfields near primary schools a town and a city
- 2 managed inclusive playgrounds in a city
- A municipality owned playground + outdoor pool in a village
- An indoor playground in a city

On top of that, I conducted a qualitative semi-structured interview with a voluntary inclusive playground manager. Inclusive playground managers have accumulated a lot of insight into the playground culture over time. Therefore, they can confirm, refute or elaborate my observation findings.

Figure 27: Visited playgrounds

Results and evaluation

Table 2 gives an overview of the made observations followed by their evaluations.

Table 2: Playground observations and evaluations

What happened	Why did it happen	What can I learn from this	How can I use/benefit from this knowledge
Empty playgrounds	According to the inclusive playground manager children tend to play inside more.	Sometimes parents will visit a playground with their children but they will not encounter others.	Arranging a meeting between parents will increase the chance of encounters at a playground.
Most parents did not interact with each other	Parents were focused on their phone.	Smartphone usage decreases the opportunity for interaction	Either use smartphone usage to your advantage and/or try to decrease smartphone usage.
Most parents did not interact with each other	Parents did not know each other and thus preferred to sit alone when there was a large number of tables/ seating arrangements. Or stand alone at the side when there are fewer seating arrangements.	Parents often tend to keep their distance from each other when given the chance.	Nudging, stimulation or fewer seating arrangements are needed to interact.
When 2 children start to play together while the parents are close to them, small, often short-lasting, spontaneous conversations occur.	The (play of the) children provided an opportunity to start a conversation and a conversation topic both parents are interested in.	Talking about children('s play) is an easy and good spontaneous conversation starter that most parents are interested in.	Providing opportunities to talk about PCwD's and PCwTD's children stimulates conversation and a base to express the similarities or capabilities of the children. On top of that, it can lay the base for further conversation.
When CwD and CwTD get into a fight both parents get involved to solve the matter. They discuss what happened and explain to the children how they should behave.	Parents value the safety of their children and good behaviour.	A small children's fight can bring PCwD and PCwTD together and start a discussion about values and correct behaviour.	Stimulating small easily solvable conflicts between CwD and CwTD can stimulate the contact between PCwD and helpt them to discuss their children's behaviour as well as preferred behaviour.
Parents who know each other or have met at the playground before tend to sit together and their children more often play together.	Parents who are familiar with each other feel more comfortable interacting. Parents who are familiar with each other also tend to stimulate their children to play together.	Providing a meeting between parents will stimulate future interactions and stimulate the children to play together.	A prototype can stimulate repeated interactions between PCwD and CwD's by helping to facilitate the first meeting between PCwD and PCwTD.

Conclusion

How do parents at playgrounds interact with each other and their children?

There are not always parents with their children at neighbourhood playgrounds, making parental interaction very difficult. When more parents and children are present, parents still rarely interact with each other unless there is a lead that can help them to start a conversation. The results in Table 2 provide insights and ideas for these leads. On top of that, when parents have met each other before they more easily start a conversation that is also longer lasting, while also stimulating their children to play together.

3.3 Parental experience

Up until this point, I heard that PCwD do not always visit (inclusive) playgrounds with their children. Several reasons for this were found in Chapter 3.4 by context mapping the focus group interviews conducted by the consortium. However, to get a deeper understanding of the situation it is important to confer with PCwD themselves about their direct experiences, feelings and behaviour when visiting playgrounds.

Research questions

What do PCwD experience when they visit the playground with their children?
Do PCwD have social interactions with other parents at the playground?
What is it like for PCwD to talk about their child's disability?

Method

To get a better understanding of PCwD's experiences at playgrounds I conducted a semi-structured interview with 3 PCwD with CwD physically aged 8, 10, 10 and 18.

Results

Playground experience:

Every PCwD has a different playground experience. However, all of them described how they and/or their CwD were stared at when the disability of the CwD was visible. 1 parent however did mention to prefer making the disability of their child visible as this stimulated PCwTD to explain to CwTD that the CwD had a disability and that they should treat the CwD more carefully.

A parent also described that it can be difficult for PCwD to go to the playground with their child as you might have to be near your child all the time to keep them safe. Other than that, 2 parents described how CwTD sometimes bullied or challenged their CwD and that they disliked this and that it can be very frustrating to deal with on your own when the parents of the CwTD are not near. This highlights the need for safety and relaxation.

"but some children then start to act annoying and immediately think that they are something."

"A parent of a child with a disability sometimes has to struggle and then it's nice to be able to have a chat. To have a point of contact. Then it is sometimes nice to hear that they also have difficult children, even if they do not have a disability"

When it comes to contact between PCwD and PCwTD, 1 parent also described how PCwTD did not avoid them at the playground, but they also did not make contact. Another parent had occasional short conversations mainly about the CwD's disability and the third parent used to often talk to PCwTD at the playground about the children in general not focusing on the disability.

1 PCwD also described how they often encounter PCwTD who judge a situation without knowing about the CwD's disability. Causing frustration but after an explanation PCwTD often apologise and have a better understanding of the situation.

Talking about the disability of their child:

All 3 parents talked easily about the disabilities of their children, however, when asked if this had always been the case for them, all 3 of them replied that that had not been the case. As their children were now a bit older they had accepted the disability and gotten more used to talking about it. However, it used to be very emotionally loaded due to the burden it put on the PCwD themselves as well as worries for and about their children's future. On top of that, 1 PCwD explained that the questions others ask can also cause insecurity or frustration as PCwD do not know the answers yet themselves.

"I also had to cry every time because it is just very heavy."

"People expect you to have the answer to everything right away, but you don't know it all yet yourself and you still have to discover it."

Currently all PCwD talk about the disability of the children and when needed they correct or explain things to PCwTD and CwTD. Especially if someone asks a question with honest intentions. However, 2 of the 3 PCwD prefer to avoid talking about and explaining the disability of their child to other parents at the playground.

"But I didn't really want to talk about it either. You don't want to stand out because you already get so much attention. For example, from teachers, supervisors, extra meetings, you name it."

Conclusions

What do PCwD experience when they visit the playground with their children?

PCwD and CwD are often stared at when the disability is visible. However, this does not make them feel unwelcome. 2 out of 3 PCwD talked about their CwD sometimes being bullied by CwTD when the PCwTD were not near causing frustration for the PCwD. Keeping the PCwTD near when CwD and CwTD are playing together will allow the parents to interfere and correct when needed, also preventing frustration of PCwD.

Do PCwD have social interactions with other parents at the playground?

This differs per PCwD and the topic of conversation also differs per parent.

What is it like for PCwD to talk about their child's disability?

Talking about the disability of a child can be emotionally challenging for PCwD and is therefore avoided as much as possible at the beginning. It becomes easier to talk about the disability with time, however, not talking about the disability is often still preferred.

This contradicts the finding in Figure 26 showing the most employed tactics to stimulate inclusive play are verbal. Most verbal tactics originate from the focus groups (Chapter 2.4). Considering the focus groups revolve around speaking of the CwD's disability, this introduces a large bias as mainly PCwD who are comfortable with talking about the CwD's disability will participate. Accordingly, the findings of this Chapter 3.3 are given priority and it is concluded that conveying information about the disability of the CwD in an indirect way is preferred by PCwD.

3.4 Overall conclusion

Based on the literature and field research important insights have been found. These insights have been turned into wishes and requirements that will function as guidelines for formulating the vision and the ideation process. Table 3 shows the most important requirements. Appendix F presents the full preliminary list of requirements.

Table 3: most important preliminary design requirements and wishes

Requirements	Chapter
The product has to be suitable for children with visible disabilities and their parents	2.2
The product has to increase direct experience • To create an accessible attitude that increases behaviour-attitude consistency • To create first hand situations in which misconceptions are dispelled thus influencing the cognition component of attitude. • To increase awareness of CwD • To reduce stigma • To decrease the need to talk about the CwD's disability	2.3 2.3 2.3 2.4 + 3.1 3.1 3.3
The product has to provide a feeling of security for PCwD	2.4
The product should stimulate contact but not force contact between PCwD and PCwTD (human need of autonomy)	2.4
The product has to facilitate a flexible and adaptable type of play allowing for a personal approach	2.4
The product has to address PCwTD who have a weakly held attitude	2.4
The product has to stimulate PCwD to take a step away from the children's play	2.4
The product has to increase PCwTD's attitude in a positive way	2.4 + 3.1
The product has to provide a lead for conversation between PCwD and PCwTD	3.2

Wishes	Chapter
The product should help PCwTD and PCwD to teach CwTD to play inclusively	2.4
The product should help PCwTD to set a good example for CwTD	2.4
The product should help PCwTD to correct CwTD's behaviour when it is needed	2.4
The product should stimulate the human need of competence for PCwTD	2.4
The product should use non-verbal tactics to stimulate contact and inclusive play	3.1

4. Defining

In this chapter the design brief is further defined. Subjects such as the originally defined target group and target context are redefined to be inline with the findings of the desk and field research. Additionally, a vision is formulated that acts as the guideline for the design process.

4.1 Target group

According to literature PCwTD in the Netherlands accompany their children during outdoor play until the age of approximately 6. Afterwards, children go out to play on their own and parents try not to interfere with their play (Broekman, 2019; CJG043, 2021; Dekens, 2023; Ouders.nl, n.d.). Therefore, it is important to target parents of children within the age group of 4 to 6 as they still accompany their children to outdoor play spaces and still influence play.

Furthermore, it is important to educate children at an early age as it is still easy for them to learn and they will benefit from it throughout their life, as the Dutch saying goes: ‘jong geleerd is oud gedaan’.

The Chapter 2.4 showed that children who attend special education lose the connection to their neighbourhood. Making it more difficult for them to arrange play dates close to home while also having less opportunity to play outside due to lack of time and energy. As a result, CwD who attend special education have less opportunity to play outside (close to home) with CwTD in comparison to their peers who attend regular education and therefore have a larger need for an intervention enabling inclusive play.

In literature, it was found that invisible disabilities can be hidden to a certain extent. Though unhealthy, this helps children to make the first contact without being judged/stigmatized for their disability whereas visible disabilities cannot be hidden. As a result, children with a visible disability are judged before having the first contact with other children. Therefore, the target group of this thesis are parents of children with visible disabilities. Figure 28 shows examples of visible disabilities.

Figure 28: Muscle disease, blindness, down syndrome, dwarfism

Targetgroup:

Parents of children who have a developmental age between 4 and 6 years old.
Parents of children who attend special education with visible impairments.

4.2 Target context

This thesis focuses on play spaces within a neighbourhood (Figure 29) as these are closest to the children's homes. This reduces the time barrier to visit the playground and it can help CwD maintain their connection to the neighbourhood. Additionally, regular play spaces are less busy reducing chances of overstimulation for children with sensory processing disorder (Baranek, 2002).

These play spaces are often not (necessarily) inclusive and are unmanaged (unlike most inclusive playgrounds that are managed by volunteers). They can differ in size depending on the city and neighbourhood. As well as be paved or not paved. These play spaces include playgrounds, playfields and schoolyards. Some examples of neighbourhood play spaces are shown below.

Figure 28: Target context

4.3 Design vision

Based on the findings from the literature and field research the following vision is formulated:

I want to change the attitude and behaviour PCwTD between the ages of 4 and 6 to be more positive towards CwD through direct experience while helping CwTD learn how to play inclusively through parental guidance. I want to do this by stimulating contact between PCwTD and PCwD within their neighbourhood and enabling them to stimulate and provide input for inclusive play together for CwD and CwTD.

Figure 29 visualises the vision.

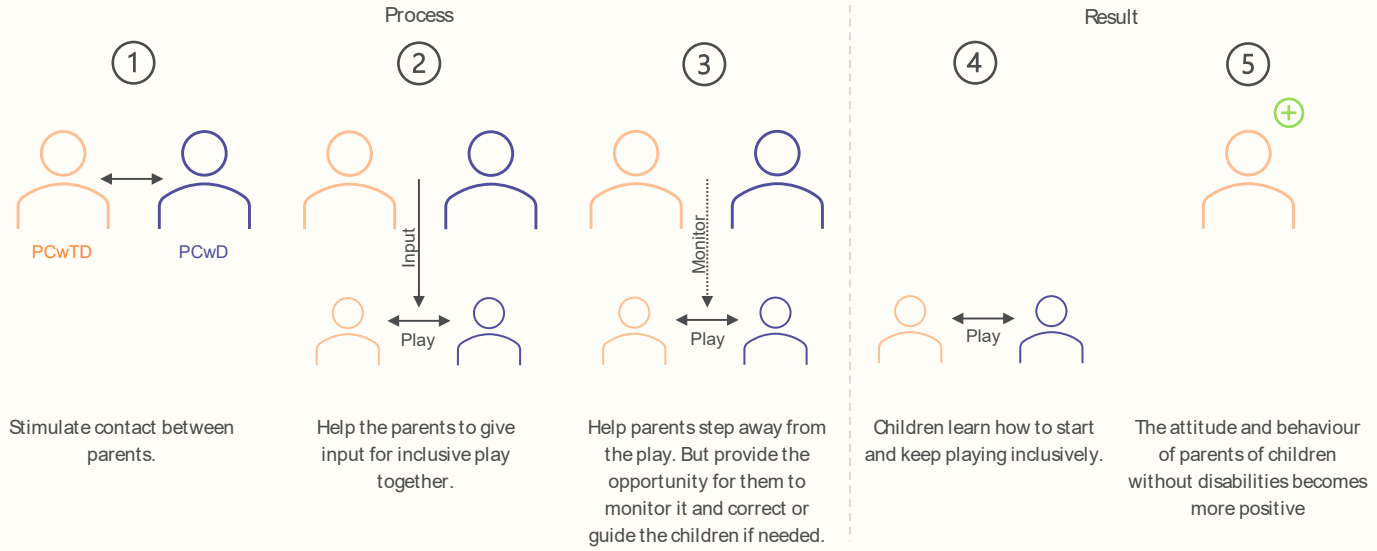


Figure 29: Design vision

Changing attitudes
The previous desk research on attitudes shows that most of the social barriers for CwD are formed and influenced by the attitudes of PCwTD and CwTD. This is supported by Chapters 2.4 and 3.1 where the focus groups and interviews with professionals also highlight these elements as a part of the knowledge gap. Therefore, to decrease the social barriers CwD face, the attitudes of PCwTD and CwTD should be changed to become more positive.

Creating a direct experience
PCwTD rarely encounter CwD, as a result, their attitudes and behaviour remain based on indirect experience and they therefore remain unchanged. Creating an opportunity in which PCwTD can gain direct experience with CwD is the best tool as this highly influences accessible attitude, allowing attitude change and causing people's behaviour to be more in line with their attitude. Direct experience also targets the cognitive component of the attitude which is the most important component.

Additionally, the chapters on attitudes, adult influence and the knowledge gap show that children with visible disabilities are thought to be very different from CwTD even though that is often not the case. Therefore, showing the similarities between CwD and CwTD and the capabilities of CwD through direct experience is a good way to dispel these misconceptions. Thus once again stimulating the cognitive component of attitude to become more positive.

Providing input for inclusive play
PCwTD do not know how to treat CwD as they are inexperienced and can be afraid of doing something wrong. PCwTD are also often not aware of the CwD capabilities. Consequently, they cannot teach their children how to behave towards CwD either.

PCwD, however, do not like to talk about the disability of their child as this highlights the disability and the differences. As well as being emotionally challenging for them. They do, however, correct CwTD and PCwTD when they feel it is needed. Therefore, a less direct way of conveying information would be more suitable for them. As PCwD have more experience and knowledge about the abilities of their child, they can guide PCwTD.

The analysis of the generative focus groups in Chapter 2.4 shows that CwTD intend to play inclusively but find it difficult to come up with inclusive play ideas and remain playing inclusively but they can learn it quickly. Therefore, they need to be taught how to play inclusively by adults.

Monitoring play
For children to build their confidence and develop themselves to the best of their abilities parents need to take a step back (Bianquin, 2018). This is highlighted in chapters 2.4 and 3.2 where the overprotective nature of adults is described. For PCwD this is especially difficult as they fear the safety of their child but that makes it all the more necessary. Therefore a safe environment in which the parents can monitor their children but still allow them enough freedom for play to flourish is desired. This also allows for opportunities in which the parents can correct their children when needed and thus create a learning experience for everyone.

Conclusion
To summarise the core of the vision the following keywords can be used:

- Stimulate contact
- Organise inclusive play
- Step away from play
- Result = improved attitude towards CwD

5. Ideation

In this Chapter, the knowledge gained from the literature and field research about CwD, PCwD, the barriers they face and their current context, is used to ideate ideas to satisfy the vision formulated in Chapter 4.3. This is done through a brainstorm session as well as individual ideation.

5.1 Student brainstorm session: ideating on sub-elements of the vision

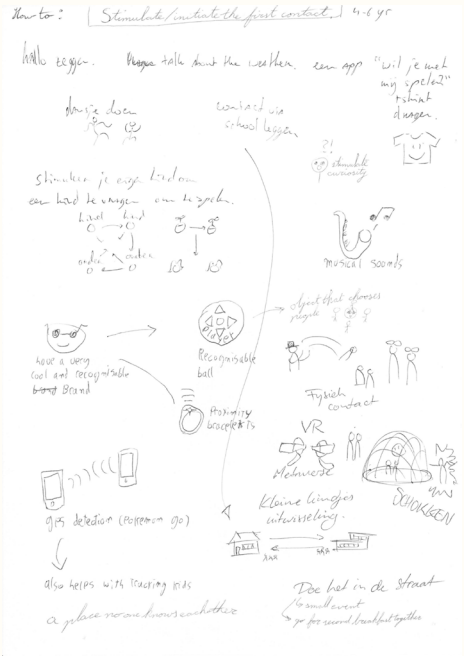
The vision formulated in Chapter 4.3 is made up of a number of components. As a result, it is difficult to come up with ideas that directly satisfy all different aspects of the vision. Therefore, the vision is dissected into sub-elements, for which ideas were generated. For this, a brainstorm session with 4 peers was organized to generate creative ideas that could be used as building bricks for other ideas.

Method
To generate a lot of creative ideas, quantity was encouraged over quality. To provide everyone the opportunity to share their ideas equally the method of silent brainwriting and -drawing was chosen (Lucidchart, n.d.; VanGundy, 1984).

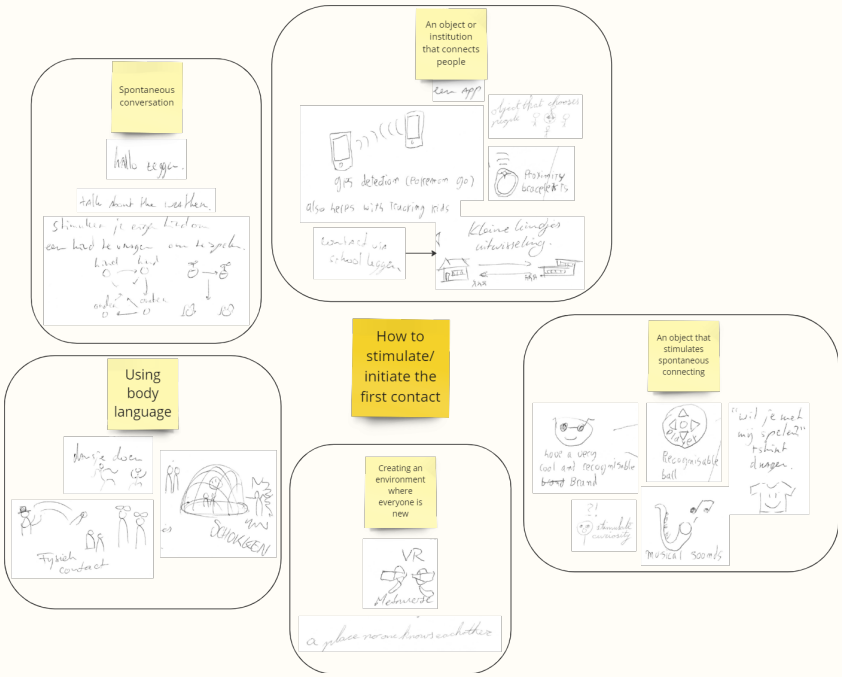
Every participant received a piece of paper with a ‘how to’ question (van Boeijen, Daalhuizen & Zijlstra, 2020) relating to a sub-element written at the top (see Appendix H for the rephrasing). Then a timer was set at 5 minutes in which each participant got the time to write and draw their ideas. When the timer went off, each participant slid their paper to the next person who then received 1 minute to read the question and look at the previous participants’ ideas. The participants got another 5 minutes to continue. After the session all the ideas were clustered based on the meaning behind them.

Results
From the brainstorm a large quantity of ideas came forth. Figure 30 gives an overview of the processing of these ideas. Appendix I, shows all clusters with brainstorm drawings. This resulted in groups of ideas with a shared meaning for each sub-element of the vision (Figure 31). Between certain groups there is a lot of overlap, these groups are connected using arrows. The arrows show that 1 design element can be used to satisfy two separate sub-elements of the vision. As mentioned before, the clusters per sub-element can now be used as building blocks for individual ideation.

1. The drawn and written down ideas were discussed



2. The ideas were clustered and given descriptive titles



3. Repeat steps 1 and 2 for all how to questions and find the overlapping groups. The overlapping groups can function as extra design opportunities.

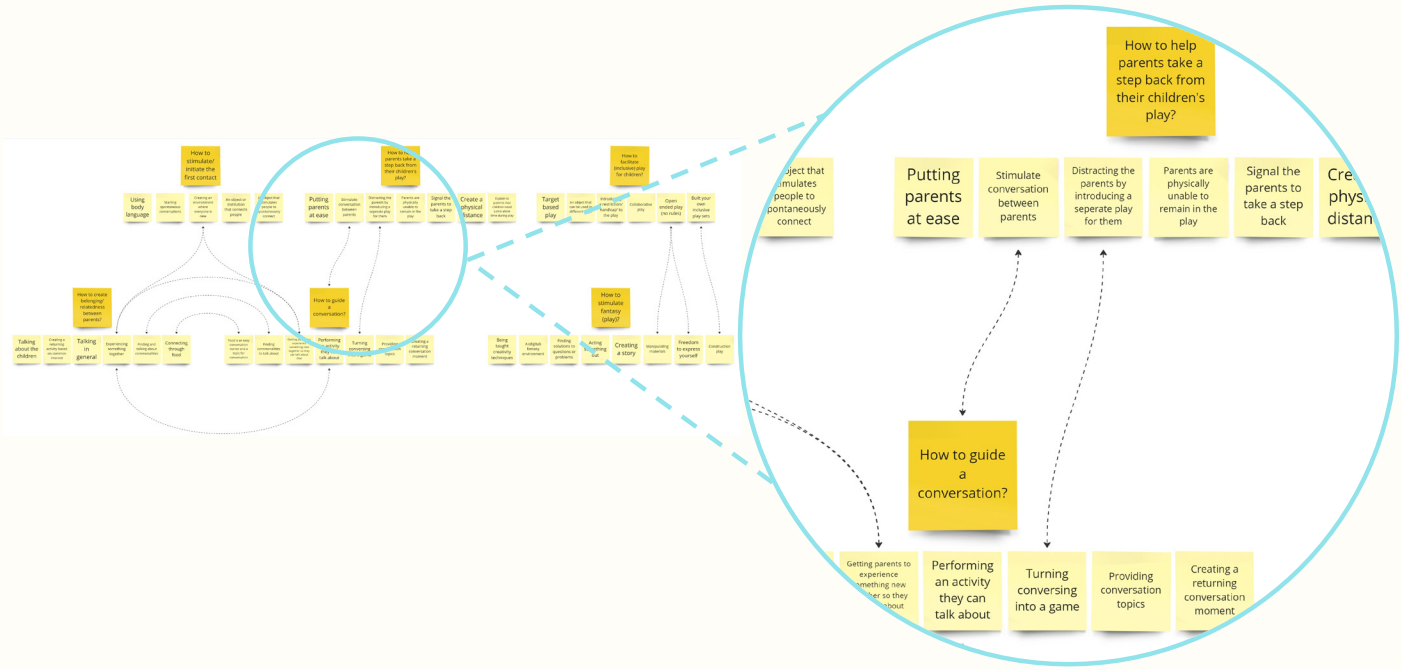


Figure 30: Method of analysing ideas

Figure 31: found idea categories per 'how to'-question

5.2 Individual ideation

The clusters from the brainstorm session provided a base for the individual ideation. Based on mixing and matching of different idea categories from Figure 31, ideating based on facilitating different play types (Hughes & Melville, 1996)(Figure 32) and using the (non-)verbal tactics employed by PCwD and experts found in Figure 26 more than 50 ideas were generated (Figure 34). Figure 33 shows an example of the individual ideation.

Figure 32: Illustrated play types of Bob Hughes (Play Scotland, n.d.)

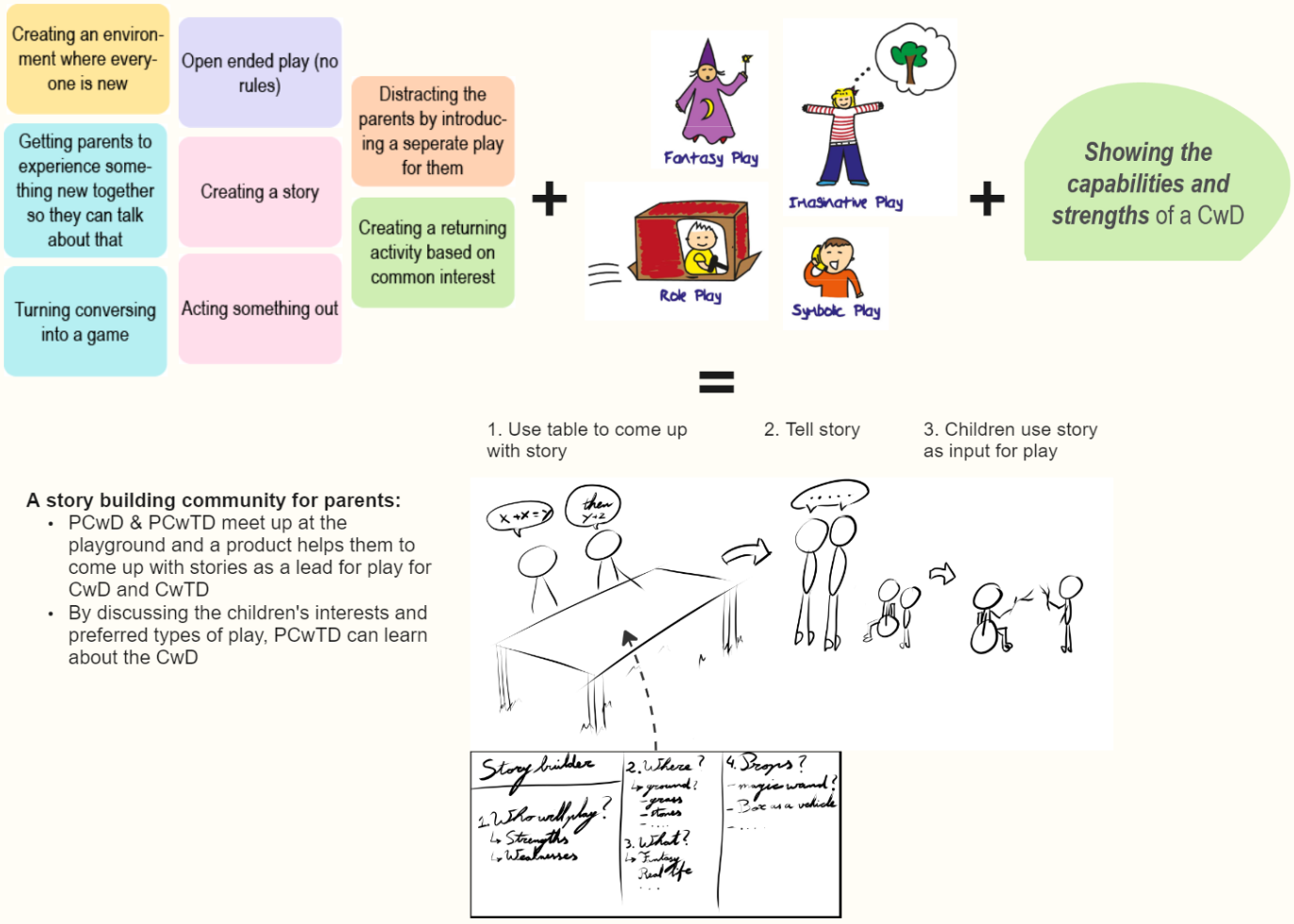


Figure 33: Example of individual ideation

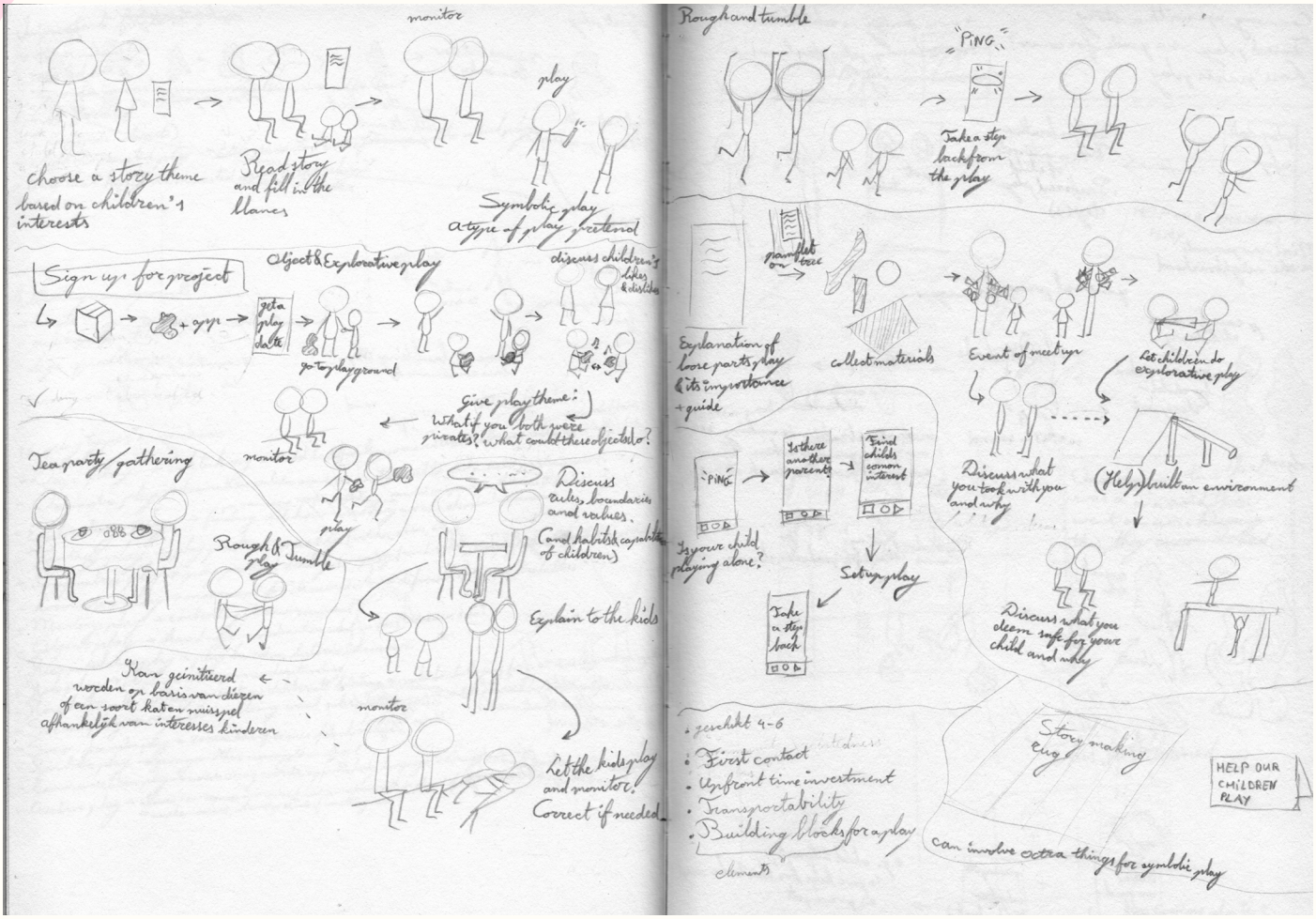


Figure 34: Impression of generated ideas

5.3 Idea selection

Several main design aspect can be found in the results from the brainstorm session as well as the individual ideation: The type of parental contact, the type of parental input and what forms the base for the play. These determine the interaction between the parents, and the children. Each aspect can be filled out differently and can therefore completely change the interactions.

To have fewer but still very different and distinct concepts, the main design elements were mixed to form 3 different design categories (see Figure 35).

Main design aspects:

Type of parental contact	Type of parental input	The base for the play
• Pre-planned 1-on-1 contact • Community contact • Spontaneous contact	• Little to no parental input • Indirect parental input • Active parental input	• Play based on play development • Creating a physical playframe • Fantasy-like types of play

Design categories:

Design category 1	Design category 2	Design category 3
• Pre-planned 1-on-1 contact	• Community contact	• Spontaneous contact
• Little to no parental input	• Indirect parental input	• Active parental input
• Play based on play development	• Creating a physical playframe	• Fantasy-like types of play

Figure 35: 3 main design aspects resulting in 3 design categories

The ideas are filtered based on the design categories. If an idea did not match the categories, it was adjusted or combined with other ideas to match one of the categories. Afterwards, the ideas were rated based on the list of requirements (Appendix G).

6. Conceptualisation

This chapter elaborates on the chosen concepts and describes the concept development process.

6.1 The 3 chosen concepts

Each concept is designed to be easily accessible for PCwD. Therefore, all the physical elements of the concepts can be borrowed at toy libraries, special education schools as well as ergo- and physiotherapists. This prevents parents from directly having to commit to a product, prevents them from having to spend extra time to pick up the product (as PCwD have little spare time, Chapter 2.4) and allows organisations to recommend the product.

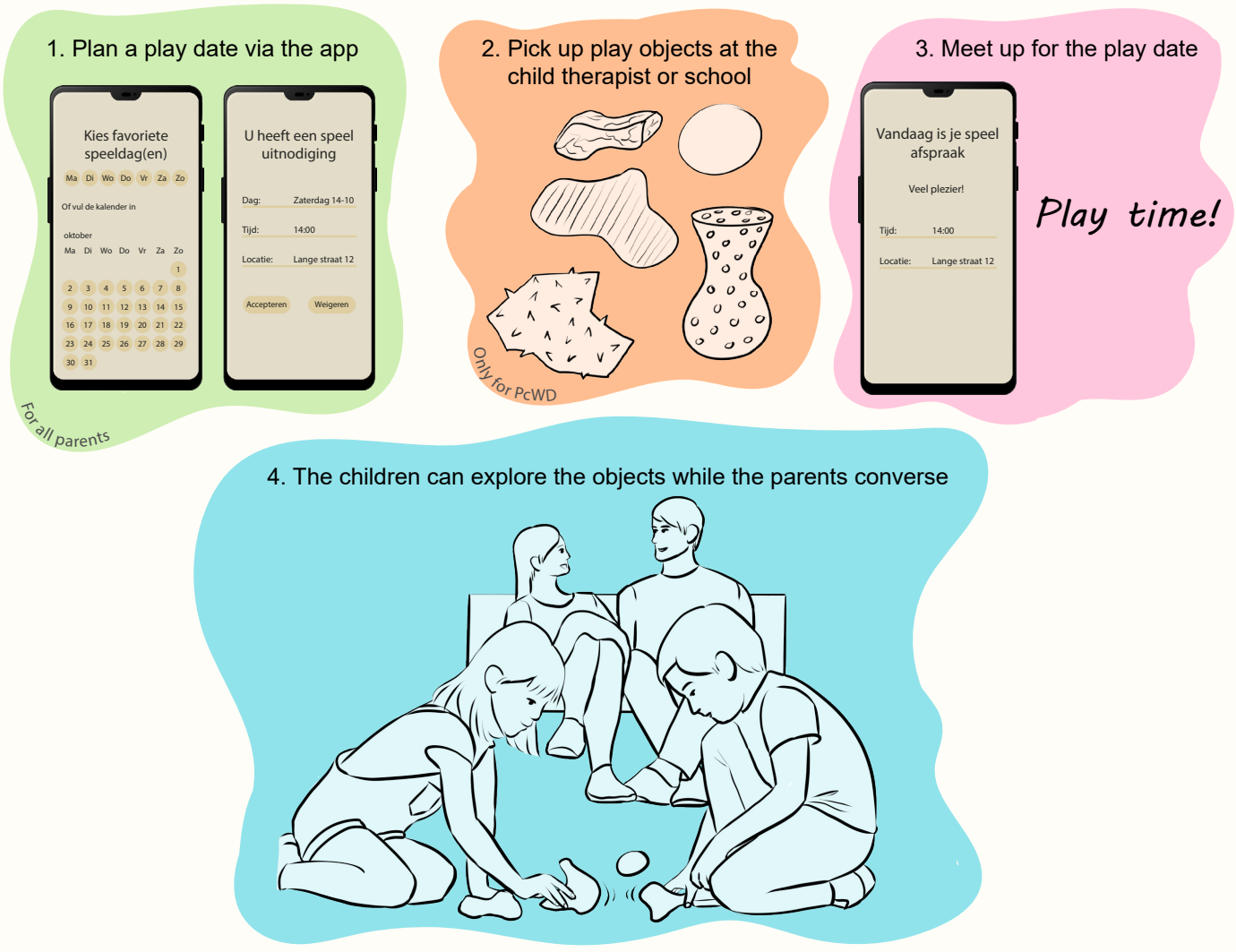
On top of that, all concepts focus on highlighting the similarities between CwD and CwTD as Chapter 3.1 showed that the knowledge gap largely finds its origin in CwD being seen as different from CwTD.

6.1.1 Design category 1: Play date

Play date is a blind-date-like application for all parents (PCwD and PCwTD) to organise play dates with other parents and their children within your neighbourhood. Figures 36 and 37 visualise the concept and Appendix J gives a full overview of the concept.

Design category 1

- Pre-planned 1-on-1 contact
- Little to no parental input
- Play based on play development



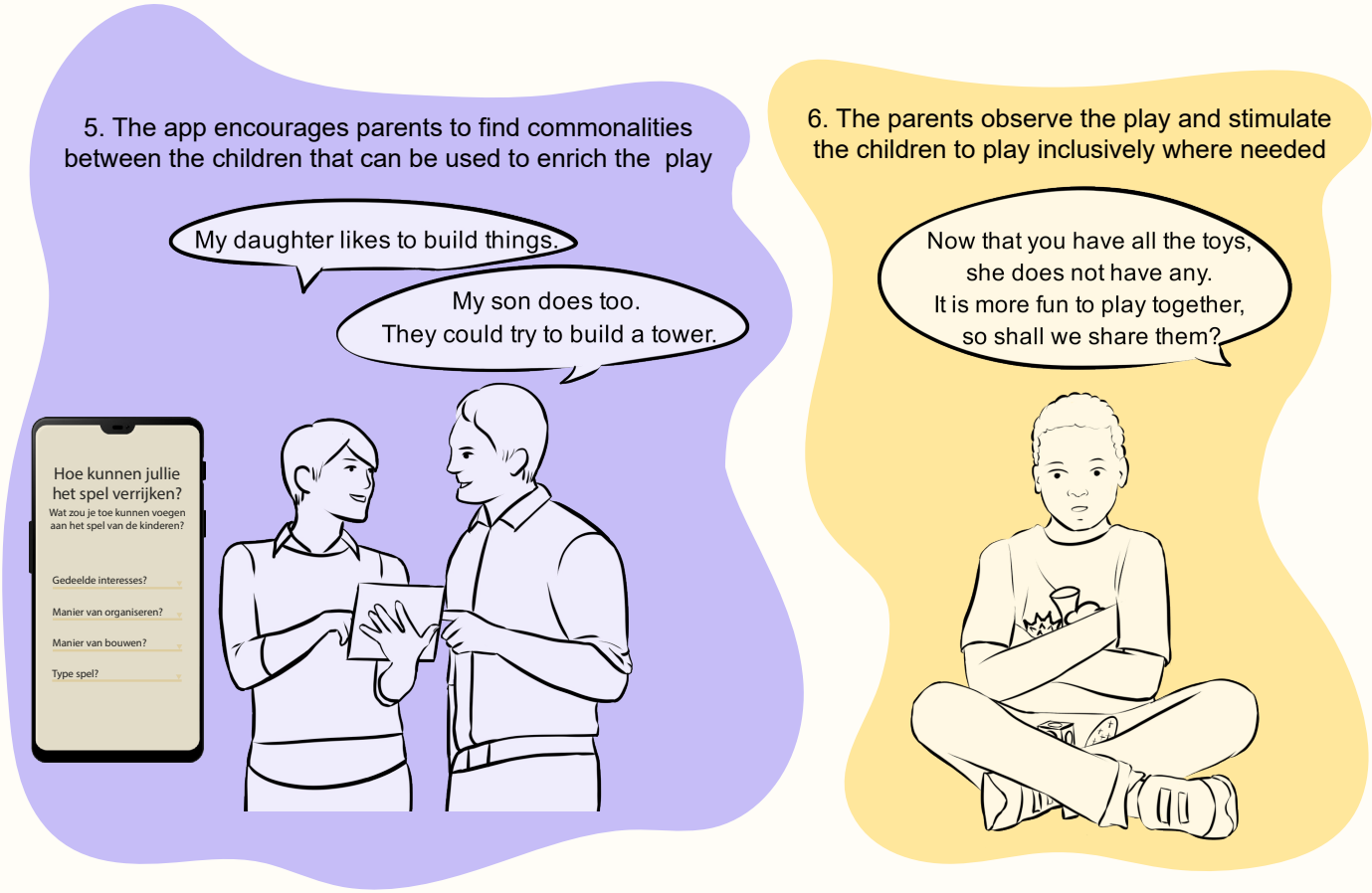


Figure 36: Interaction scenario Play date

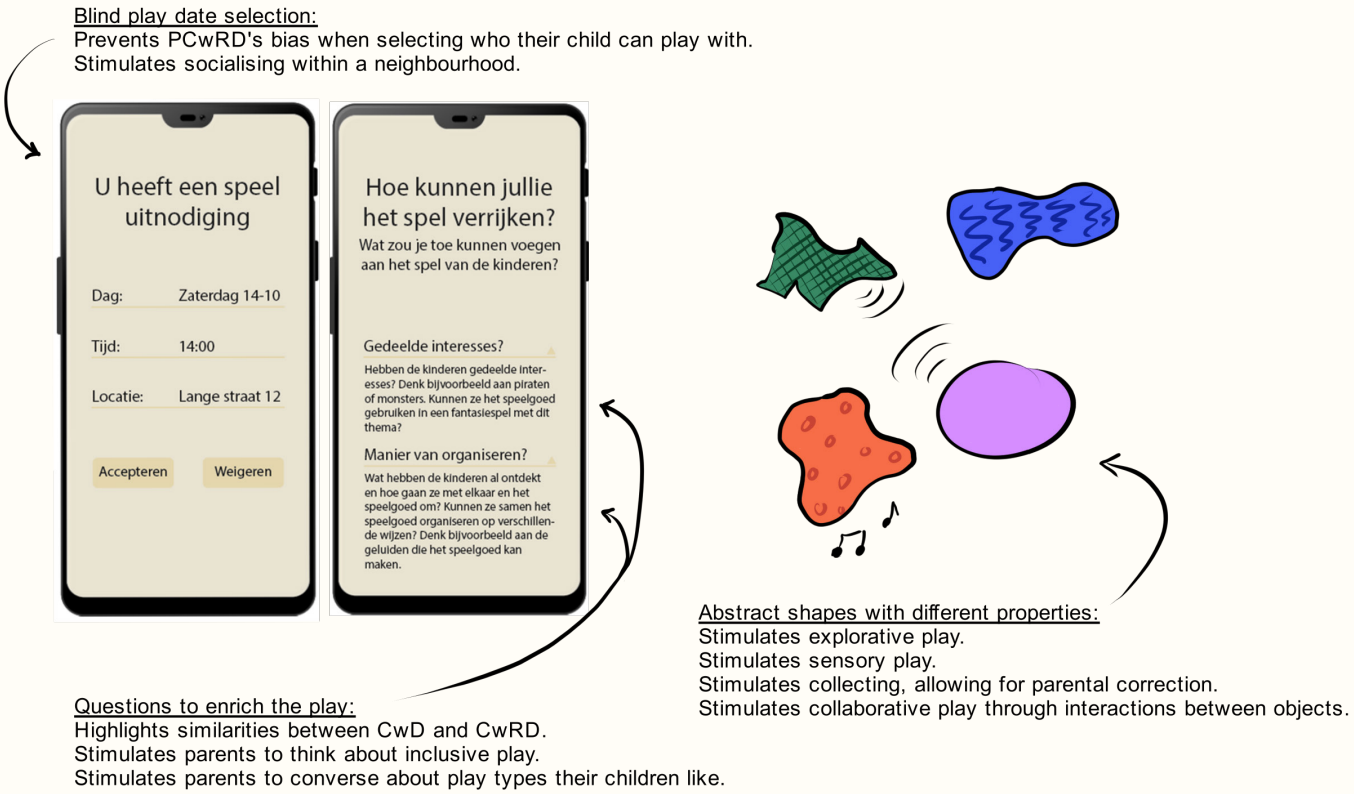


Figure 37: Play date properties

The scheduling part of the play date app is accessible to everyone and can match parent-child couples who do not know each other within a neighbourhood to schedule a play date. This provides a lead for PCwD and CwD to connect with others in their neighbourhood as they often do not know a lot of people there (Chapter 2.4). On top of that, it helps to prevent parents from being alone at the playground with their children (Chapter 3.2).

As the app will be available to everyone it prevents an advertising focus on CwD being different and thus requiring a special product. This complies with CwD wanting to be perceived and treated as normal (Chapter 2.4).

Play date does have an extension for PCwD. PCwD can pick up play objects they can take with them to the play date. The play objects are undefined objects with different properties and therefore stimulate exploratory play. Exploratory play is something every child is capable of and is thus also suited for CwD (Muentener, Herrig& Schulz, 2018; Pelz & Kidd, 2020).

Children with a developmental age between 4 to 6 reach the play development stage where they start to learn to play together (associative play followed by cooperative play) (Parten, 1932; Rubin, 1977;). However, some children may be a bit behind in their play development and thus still have difficulty with playing together. The properties stimulating explorative play also stimulate collecting the play objects This stimulates collecting the objects, resulting in the children wanting to share the objects or ‘fighting’ over them (Chapter 3.2). This will allow the parents to observe that the children are capable of playing together or they can teach their children about playing together. This provides a moment for the parents to connect on what they value during inclusive play and how you handle such a situation when a CwD is involved: E.g. do you treat the CwD differently than the CwTD when correcting them?

While the CwD and CwTD are playing the app also stimulates the PCwD and PCwTD to enrich the play based on the children’s interests. It does this by asking questions about the children’s shared interests and providing tips on how to use these for the play. This allows the parents to discuss the similarities between the children also stimulating feelings of relatedness. The other questions focus on how to guide the play towards different kinds of exploration. Helping the parents to find a type of play suited for both children.

6.1.2 Design category 2: Build a day

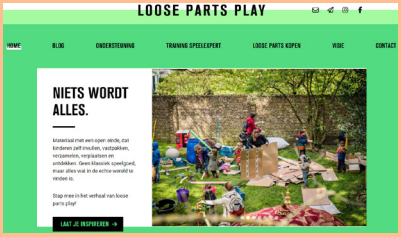
Design category 2

- Community contact
- Indirect parental input
- Creating a physical playframe

Build a day is a kit that helps PCwD to easily set up a neighbourhood play day using loose parts. Figures 38 and 39 visualise the concept and Appendix K gives a full overview of the concept.

1. Pick up a kit at the child therapist or school

2. Fill out the flyer template with your information, print it and distribute it in the neighbourhood



3. The parents start building the play environment for the children

Figure 38: Interaction scenario Build a day

Figure 39: Build a day properties

PCwD can easily fill out the build a day flyer online with minimal data. They can then print the flyers and hang them up in their neighbourhood. Amongst others, the flyer contains a QR-code providing more information about the value of loose parts play, what materials PCwTD can bring with them, how the play day will proceed and photos that give an impression of the play day.

PCwD can then pick up a toolkit. This ensures that there are always sufficient materials to build a play environment during the play day, even if other people don't bring loose parts.

On the day itself, parents and children from the neighbourhood meet each other and the parents build the play environment for the children. By discussing the children's interests and finding similarities between them (Chapter 3.2), parents can determine what kind of environment they will create. Building the environment will probe PCwD and PCwTD to talk about the needs of their children in an indirect way (Chapters 3.1 and 3.3).

By working together to build the environment the parents experience something new together stimulating a sense of relatedness and community. Also providing conversation leads for socialising after the environment has been built. By providing a way to enrich the playground experience for children, the CwD and PCwD now bring an added value to the playground, stimulating PCwTD and CwTD to join even if they think the CwD is 'odd' at first sight.

Build a day creates an environment using loose objects that can be used to facilitate different types of play. For example, pretend and reenactment types of play but it could also provide opportunities for deep play (Hughes & Melville, 1996), something CwD often do not get to experience due to the overprotectiveness of parents (Chapter 2.4).

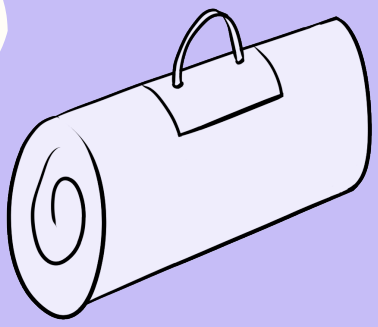
6.1.3 Design category 3: Story time

Design category 3

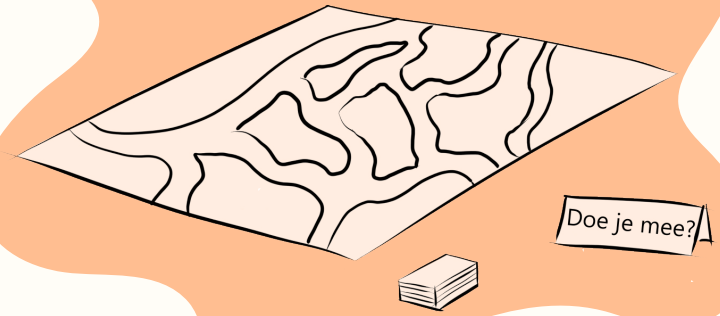
- Spontaneous contact
- Active parental input
- Fantasy-like types of play

Story Time is a sensory rug with story cards that help parents tell a story as a prompt for play for the children. Figures 40 and 41 visualise the concept and Appendix L gives a full overview of the concept.

1. Pick up the product at the child therapist or school



2. Go to the playground and lay the rug down

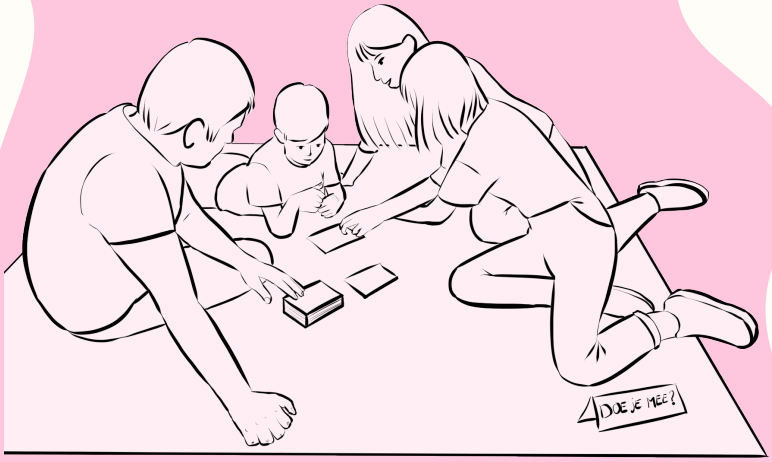


3. The rug and invitation stimulate passing by PCwTD and CwTD to ask about story time, intriguing them to join the play

What is this? Can we join?

4. The parents select story cards for the play based on the common interests of their children

5. The parents take turns drawing story cards and make up a story based on the cards



6. After finishing the story, the children start their own play based on the story.

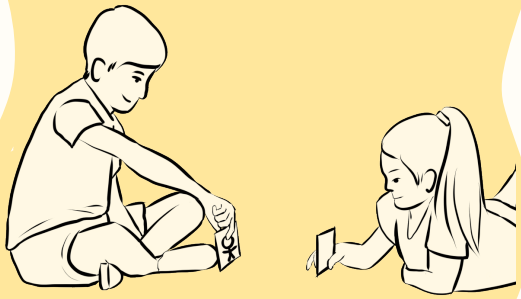


Figure 40: Interaction scenario Story time

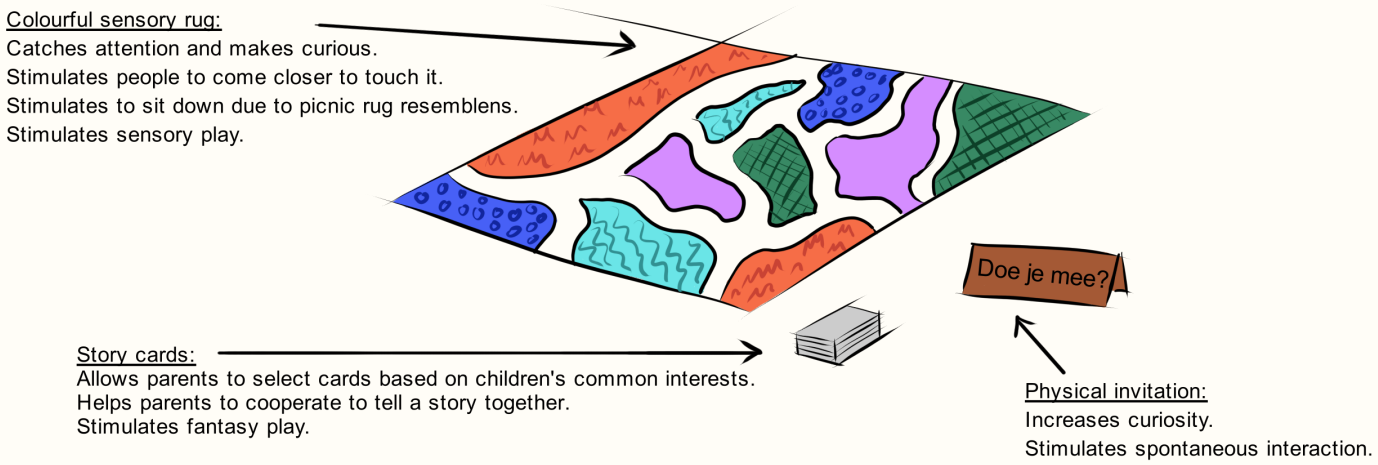


Figure 41: Story time properties

Story time consists of a sensory rug that provokes spontaneous interaction by attracting the attention of bystanders through its bright colours and textures. A physical invitation sign encourages PCwTD and CwTD to ask what the game is and whether they can participate.

Parents can tell a story to the children by together choosing a theme that matches the children's shared interests (Chapter 3.2). The parents then try to tell a story together guided by the story cards that they take turns drawing. Allowing parents to work together can stimulate a sense of solidarity and therefore relatedness.

While parents select the cards and tell the story, the textures of the rug encourage children to engage in exploratory sensory play.

The children can then set up their own game based on the story told by their parents. Possible forms of play include acting out the story or looking for attributes in the environment to enrich the story. This creates a time for the parents to converse, and get to know each other and their children a little while monitoring the play.

The rug will also be available at regular primary schools to encourage PCwTD to also bring it to the playground. This will create more play opportunities for CwD at regular playgrounds without the need for the PCwD to always take the product with them themselves. Thus decreasing the burden on PCwD. To make the concept easily transportable, it can be folded to form a bag.

6.2 Evaluation of the concepts

To continue the design process, the concepts are evaluated and 1 final concept has been chosen for further development. The concepts were previously chosen without the input of PCwD or experts. To ensure the final chosen concept matches their requirements, the 3 concepts were presented to PCwD and experts in inclusive play.

Research question

What are the pros and ccons of the three concepts according to PCwD and experts?

Method

The above-shown images and prototypes (Appendices X, X and X) of the concepts accompanied by a verbal explanation of the concepts were presented to 4 PCwD and 3 experts in the field of inclusive play. They were then asked about their opinions and first thoughts of the concepts. This was done in an unstructured way as to let the participants speak their thoughts freely and gain as much insight in what aspects of the concepts they value or dislike and what the reasons behind this are. Based on these explanations a list of pros and cons was made for each concept (Tables 4 to 6). Based on the list of pros and cons and the list of requirements in Appendix G, the final concept was chosen.

Results

Play date

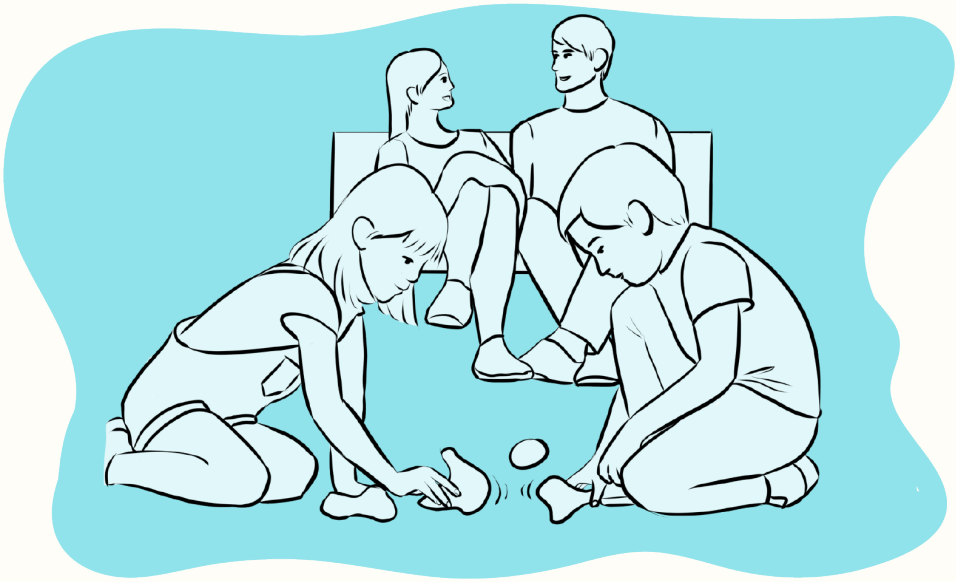


Table 4: Play date pros and cons

Pros	Cons
The simplicity of the idea: just 2 parents doing something together without too much fuss.	PCwD do not always know when they will have time to go play outside as they are very busy and the child might not want to go outside.
Play opportunities that can increase in difficulty allowing for the product to develop together with the child.	PCwTD are often not looking to meet other/new parents.
Can be the start of a buddy project where certain PCwTD set a good example for others.	

Build a day

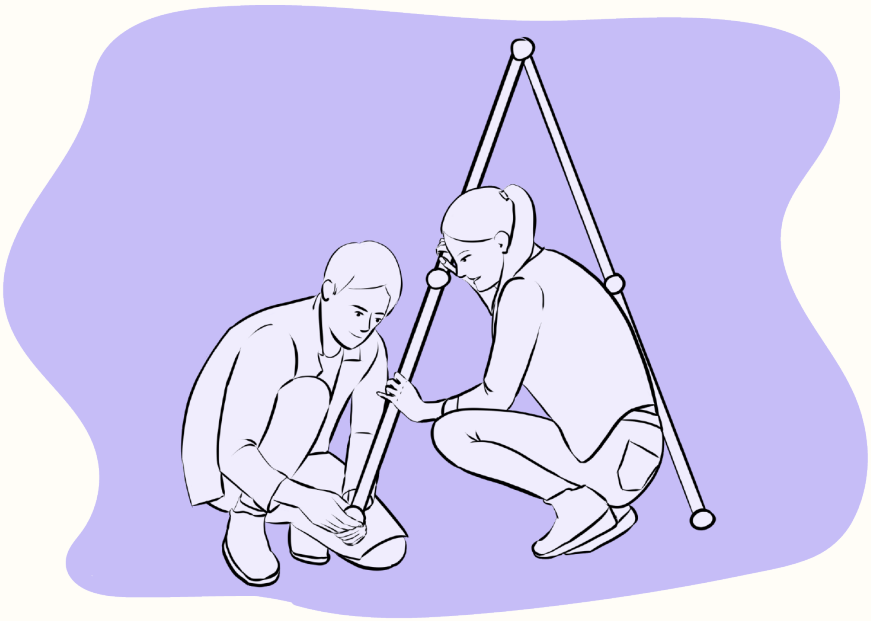


Table 5: Build a day pros and cons

Pros	Cons
It stimulates the community feeling like neighbourdays do.	It will be a great disappointment if no-one shows up.
It could turn into a reoccurring event, increasing the normalisation of CwD and strengthening the learning process.	Organising the event can cause the PCwD to feel responsible for everything which can create a new barrier.
	Depending on the loose parts the PCwTD bring, cleaning up can take a lot of time.
	Currently, somewhat similar tests are being performed with the ‘samenspeel kliko’.
	Will most likely stimulate solitary and parallel play or flight behaviour for CwD as they can easily become overstimulated when there are more children.

Story time

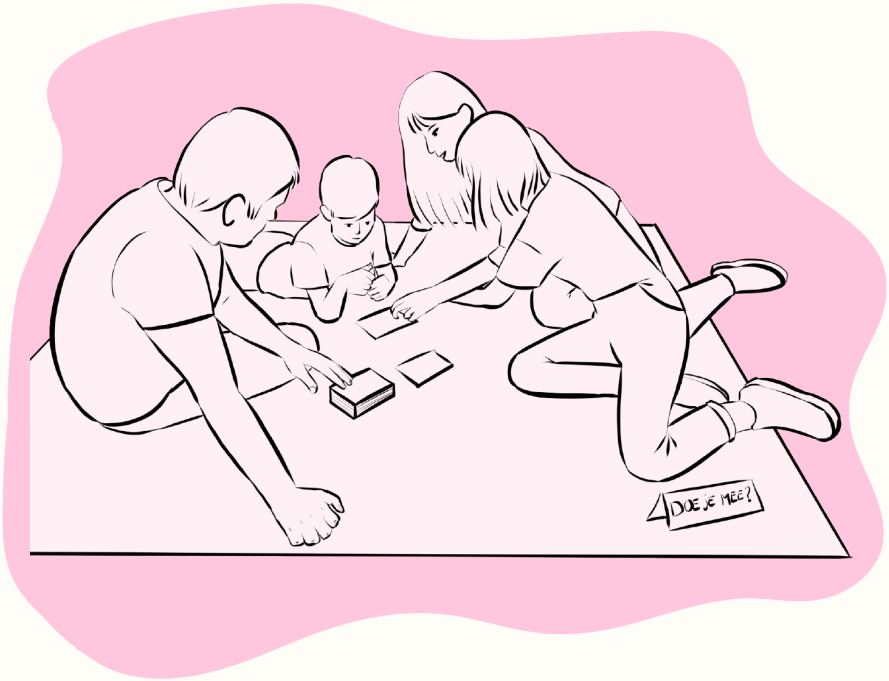


Table 6: Story time pros and cons

Pros	Cons
It attracts children due to the colours and textures (who will then bring their parents along).	hildren with autism often prefer to hear the same story each time
Intrigues and provides spontaneous contact.	In many cities, inclusivity has not yet reached the point where a PCwD and CwD would sit there alone and a PCwTD chooses approach. PCwD can be anxious and it is a big step to take for PCwTD.
Provides a starting point for conversation	Starting a fantasy play based on a story can be difficult for some CwD and if a play does not directly emerge from the story, parents will have difficulty finding a way to stimulate play: There is too little structure and guidance for PCwD and CwD.
Offers multiple play options and applications (individual use of parts, use with props, use in 'samen naar school' classes).	
Sensory play works well for many CwD.	
Creates a defined safe space for the CwD and PCwD.	
It can also be used indoors allowing the PCwD and CwD to try out and get used to the product before including PCwTD and CwTD.	

Conclusion

Story time was the concept that grabbed most PCwD's and experts' attention due to its spontaneous interaction eliciting aspects and sensory elements. As a result, this was the concept that they spent the most time talking about. Describing the positive and negative aspects as well as ideas for implementation and improvement.

Even though story time was the most liked concept, it was clear that this concept still left a lot of room for improvement and contained some serious flaws. One participant also described the rug as the base of the idea that could be added on to. When looking at the other two concepts, it can be seen that they have different positive qualities from story time. Therefore, combining aspects of the three different concepts can strengthen the story time concept.

6.3 Chosen concept: Story time and additions

As mentioned in Chapter 6.2 story time provides a good base for the final concept but requires additions. Based on the pro's, con's and suggestions discussed during the interviews, a list of required changes and additions to the concept was made (Figure 42 and Table 7).

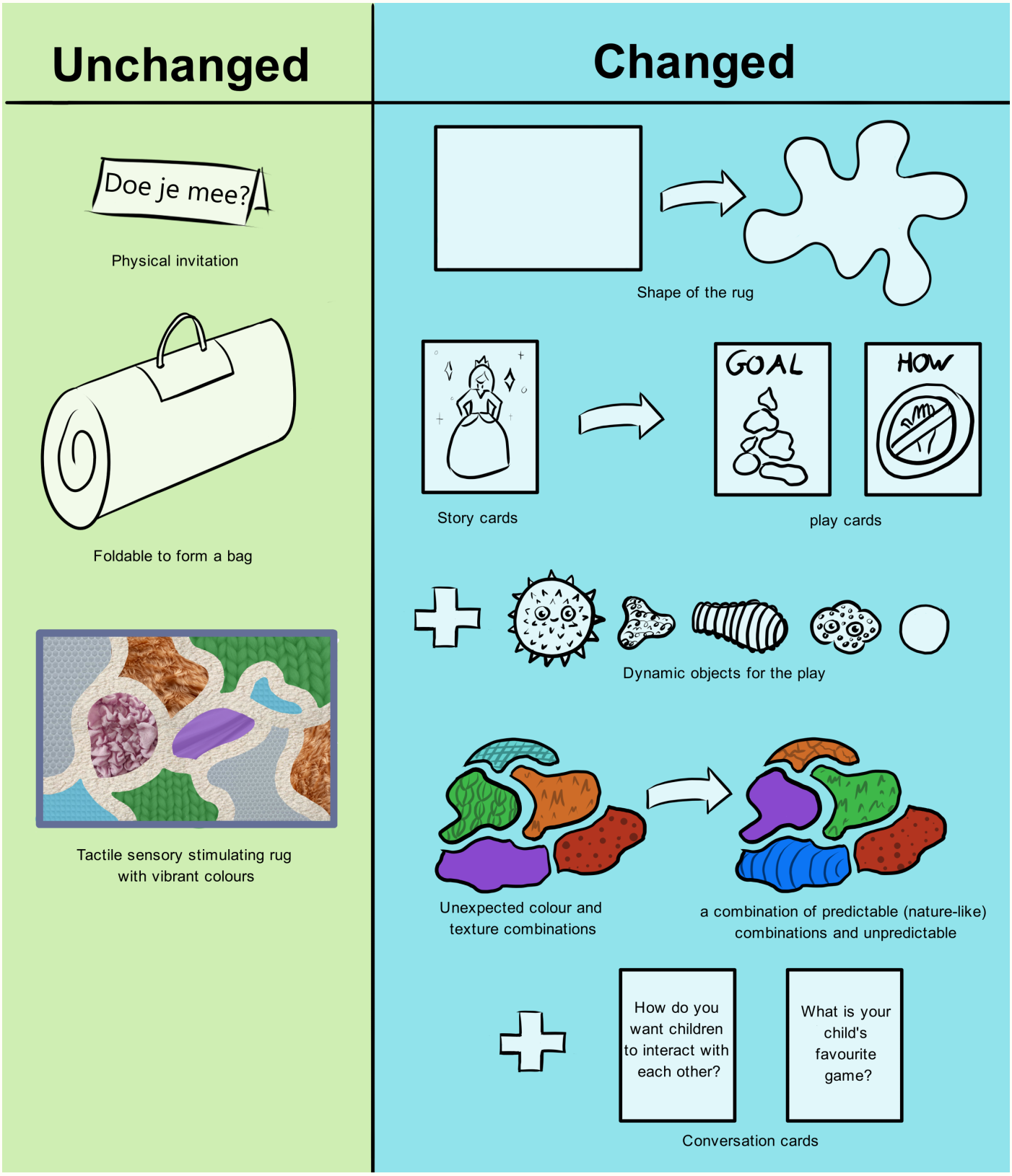


Figure 42: Changes to the story time concept

Table 7: Argumentation changes to story time

Problem	Solution	Added value	Added or changed element
PCwD can be anxious to take the product outside and to sit and wait for others to join.	Introducing the product in a safe context with affinity with the target group. (e.g. with family at home)	This allows PCwD to get used to the product without or lowered fear of being stigmatised.	Encouraging PCwD to test the product before using it at a regular playground.
It's still a big step for PCwTD who prefer to keep their distance to approach CwD with the product, as they still actively have to decide if and how to approach them.	Adding dynamic objects to the play.	Dynamic elements such as balls and bubbles can suddenly cross someone's path, providing a cue for action: pop the bubble, grab or hit the ball. This way someone becomes part of the play without actively thinking about it. On top of that, it functions as an ice-breaker.	The abstract objects of the concept play date made of softer materials to allow for safe throwing and tossing. In combination with story/play cards that stimulate dynamic use of the objects.
PCwD as well as children with autism often prefer more structure in setting up the play.	Changing the story cards into cards with play elements to help parents guide the children into play.	Structure for setting up and guiding the play decreases feelings of insecurity for parents.	Cards with elements to guide the play such as 'goal' cards and 'how' cards.

By changing out the story cards for play cards, the discussion about the similarities and common interests of the children disappears. Additionally, the cue for the parents to step away from the children's play disappears. Consequently, this element is reintroduced through conversation cards for the parents.

7. Final concept: Voelvlek

Chapter 6.3 proposes changes for further development of the concept ‘story time’. Within this chapter the proposed changes are implemented and the concept is further developed. Afterwards, the final concept is tested with CwD CwTD to gain a better understanding of their play preferences and requirements for play. Lastly, the concept is tested with PCwD, PCwTD, CwD and CwTD that test if the concept is desirable and fulfills the design vision.

7.1 Further development of the Voelvlek

By implementing the proposed changes (Chapter 6.3) the concept changes drastically. Therefore, a new name for the final concept is introduced: The Voelvlek (as suggested by a participant from Chapter 7.2). Figure 43 presents the Voelvlek and Figure 44 presents the use scenario.

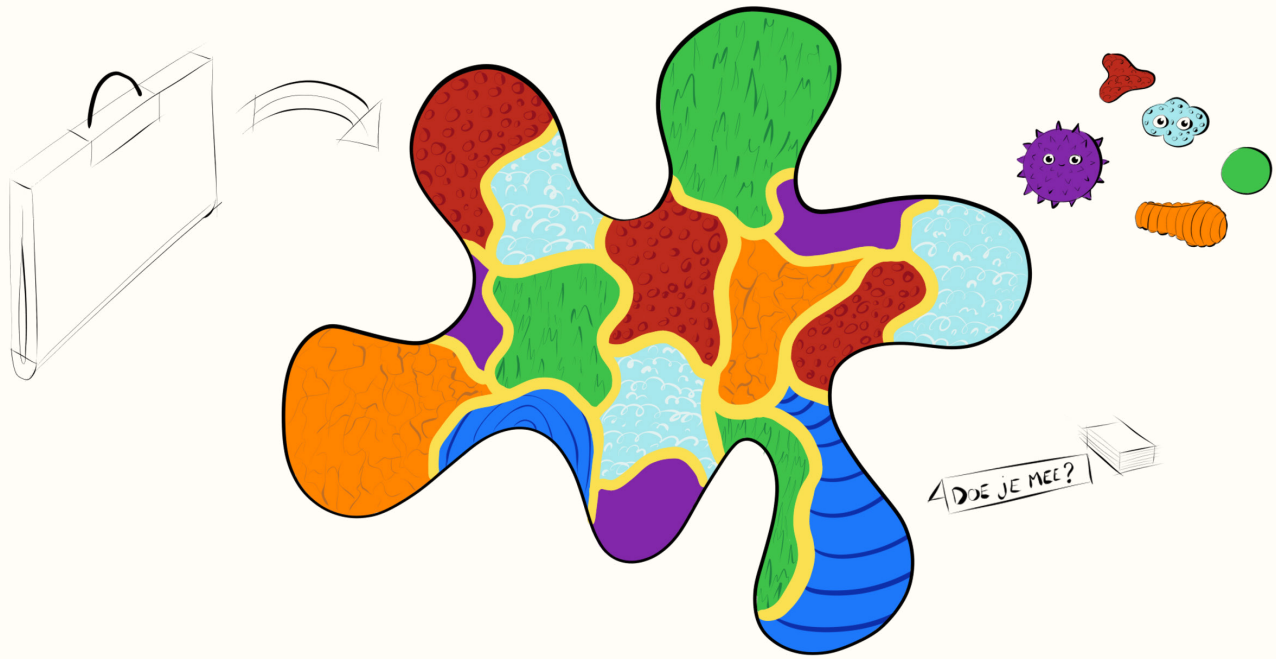
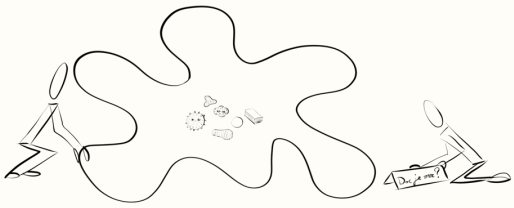
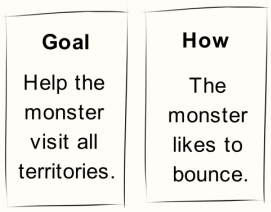


Figure 43: Design drawings of the Voelvlek

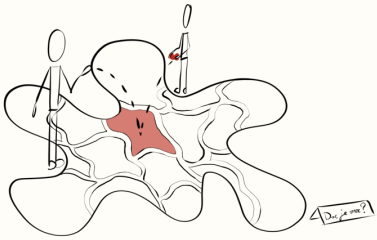
A PCwD can borrow the product from the child therapist.



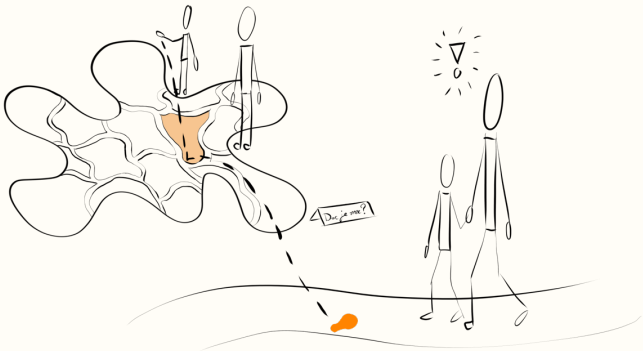
Stall out the product.



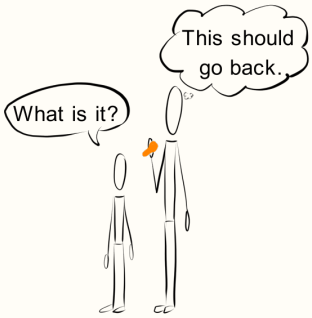
Choose the first play cards.



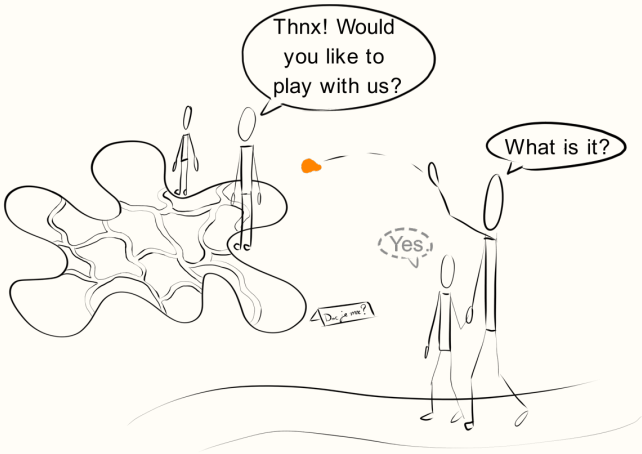
Play.



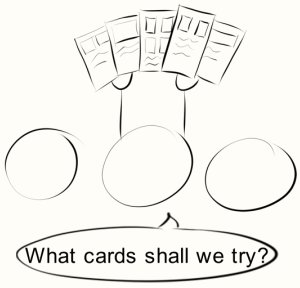
The dynamic form of play allows the play objects to end up on the path of passing PCwTD and CwTD.



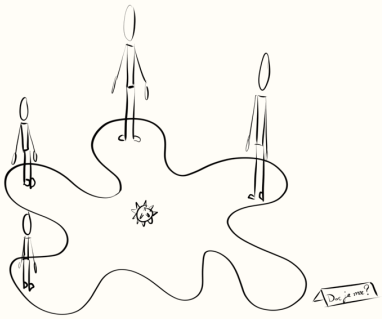
The object catches attention, calls for action of the passing PCwTD and CwTD and lowers the bar for interaction.



Requesting the object back creates a short interaction with the possibility of an invitation.

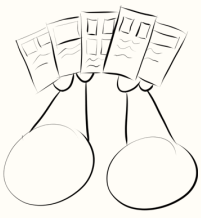


By allowing the PCwTD and CwTD to choose the game they directly get involved.

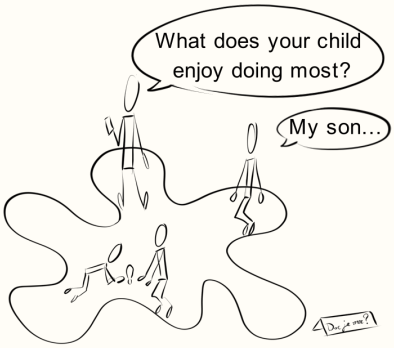


By allowing both parents to lead the play together, a feeling of relatedness, competence and safety is created.

Learning experience:
Observation and learning by doing.



The children can then choose a new (calmer) game and play this without the parents.



The parents can talk to each other using conversation cards while the children are playing.

Learning experience:
Observation of the playing children, observation of possible corrections by the PCwD and verbal knowledge transfer through positive conversations about the children.

Figure 44: Interaction scenario the Voelvlek

7.1.1 Appearance and shape

The shape of the rug was changed to be more organic as to blur the line of being in the play/on the rug. This way, outsiders more easily become part of the play when they walk up to the rug but do not step on it or sit down.

On top of that, the colours and textures of the rug are partially changed to match elements found in nature. E.g. Blue with a wavy texture represents water. This provides more leads for fantasy play.

Additionally, the dynamic elements remained as undefined shapes with different textures, however, to encourage fantasy play, the objects have eyes and are referred to as monsters. Figure 45 shows the prototype of the monsters.

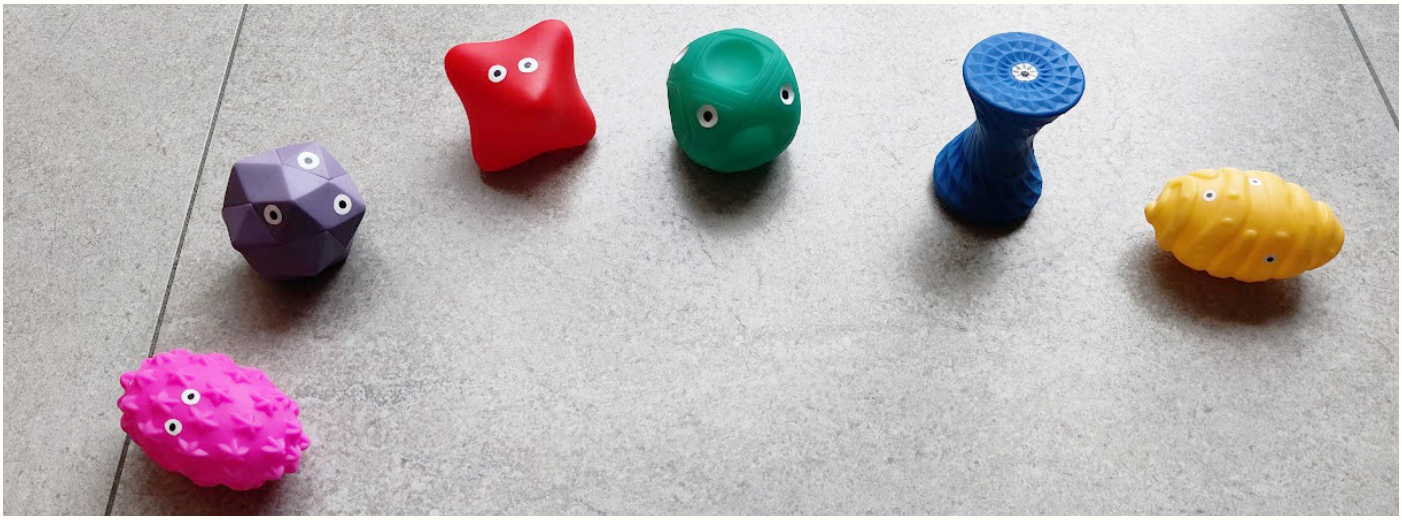


Figure 45: Prototype play objects/monsters

The story cards are changed into play cards (Figure 46 and Appendix M) that function as inspiration and building blocks for play. By creating 2 types of cards, PCwTD and PCwD are encouraged to work together to mix and match the cards. Moreover, it creates a flexible type of play making it adjustable to the players (Chapters 2.4 & 3.1).

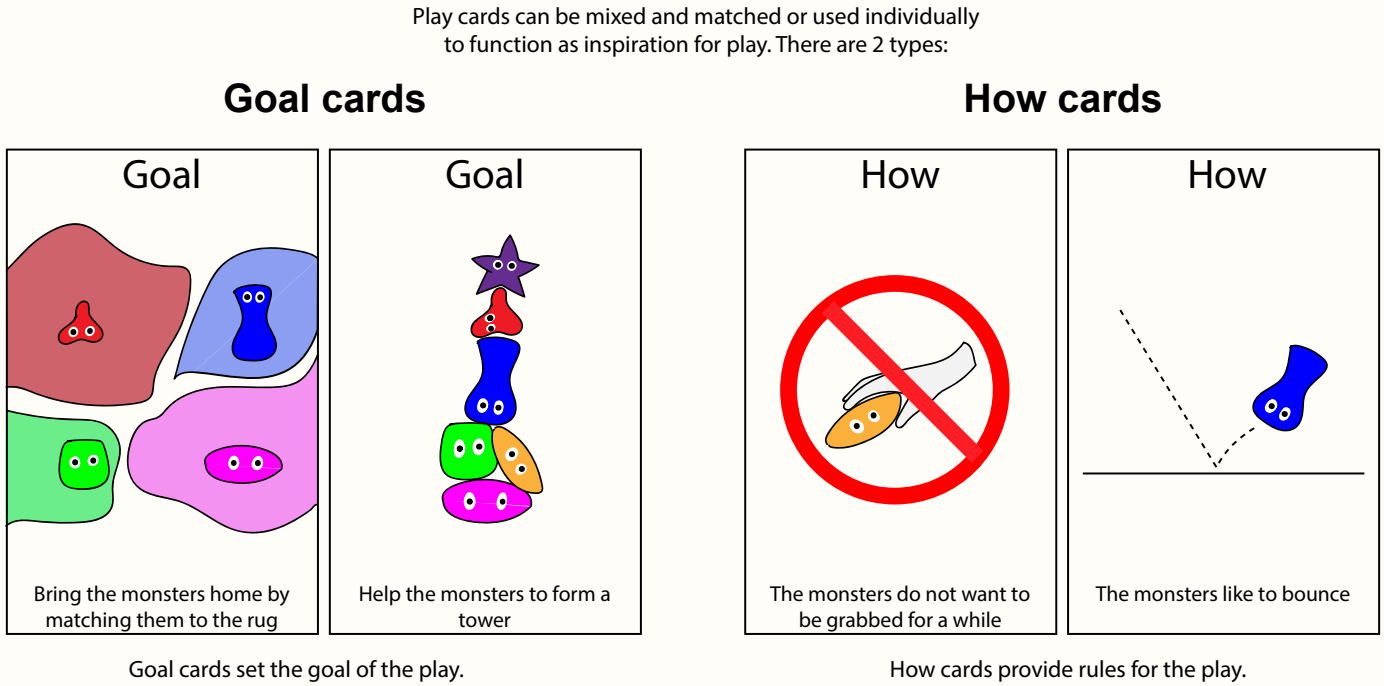


Figure 46: Examples of play cards

Lastly, as mentioned in the previous chapter, conversation cards (Figure 47 and Appendix N) have been added to the concept. As some PCwD are more comfortable with talking about the CwD's disability and what their life is like than others (Chapter 3.3), there are 3 levels of conversation difficulty. Each using a different technique based on the cards of change (Hart, Byrne-Davis, Maltinsky & Bull, 2023).

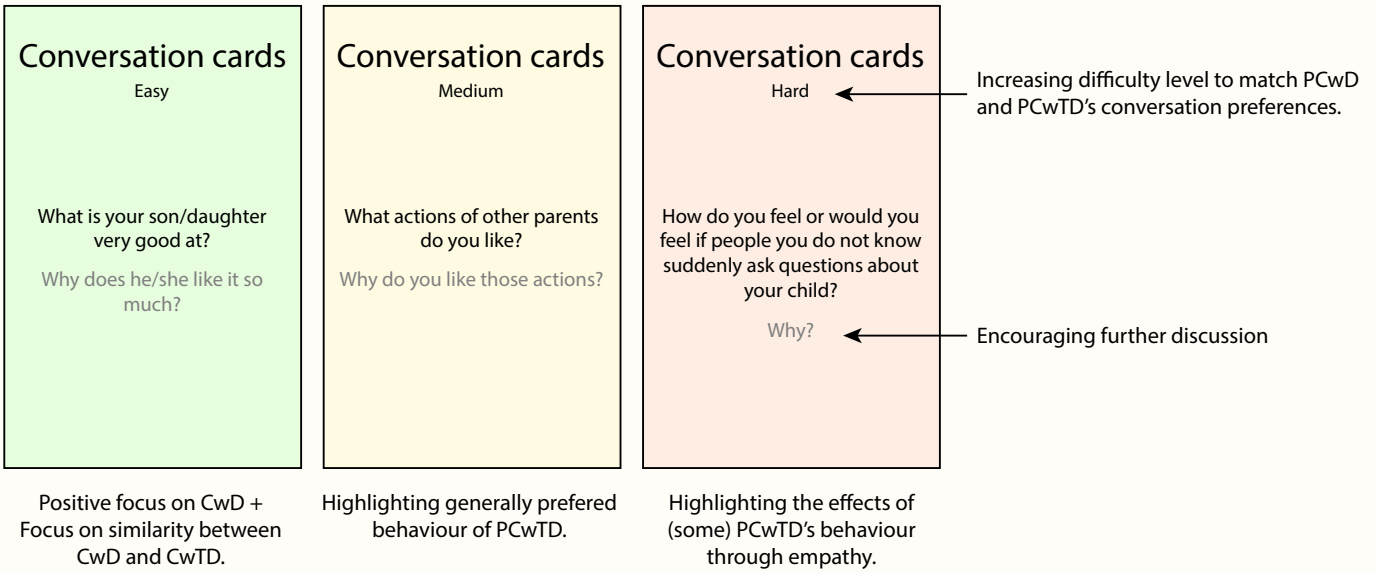


Figure 47: Examples of conversation cards

7.2 Testing the Voelvlek

To further develop the final concept, 2 tests were conducted with the Voelvlek:

- Chapter 7.2.1: Only CwD and CwTD
- Chapter 7.2.2: PCwD, PCwTD, CwD & CwTD

The test with only children tests the rug and monsters, and their influence on how the children go through the play phases (Gielen, n.d.) without adult influence. The kinds of play children develop function as inspiration for the play cards of the final prototype.

When the play cards are developed the test with parents and children is conducted to test the full final prototype and its influence on the parents' interaction and behaviour.

7.2.1 Testing with CwD and CwTD

This focuses on whether the children can come up with their own forms of play and if they can move through the play phases or require more guidance for this. On top of that, it is also tested whether or not the concept stimulates playing together, and if the composition of the group influences the play.

Main research questions

- Are CwTD and CwD able to come up with their own play (without play cards)?
  - What games do children come up with?
- How do CwD and CwTD go through the play phases?
- Does the composition of the group of children influence the play?
- Does the concept stimulate children to play together?

Prototype

The prototype consists of oddly shaped pieces of fabric, with different textures, colours and sizes, that are sewn together to form one rug. To this, 6 oddly shaped plastic balls with different textures and colours are added. The prototype is shown in Figure 48.

Figure 48: Prototype Voelvlek

Method
Observing the behaviour of CwD and CwTD with a prototype of the Voelvlek for 30 minutes.

CwD and CwTD were observed in different group sizes and configurations to find out if group composition influences the play. On top of that, the choice was made to first observe CwD individually to allow them to slowly get used to the Voelvlek to prevent overstimulation which could hinder the research.

Observation subjects:

- 3 individual CwD at a daycare with physiotherapy
- A group of 6 CwD at a daycare with physiotherapy
- A group of 15 CwTD who are in group 2 at a primary school
- A group of 6 CwTD who are in group 1 at a primary school
- A group of 2 CwTD who are in group 1 at a primary school and 2 CwD

Research setup:

The rug of the prototype was placed in the middle of the classroom or physiotherapy room, to directly catch the eye of the children when they entered (Figure 49). The teacher or physiotherapist and I then went to get the children and invited them to come and play. By doing so the children could get to know me a little which put them at ease and allowed them to get used to my presence.

To observe the children's initial reactions and capabilities without obstructing it, I observed them from a distance. If the children required adult guidance (e.g. due to someone being excluded, refusing to share, etc.) or if they could not come up with a new play. The physiotherapist, teacher or I would step in to help and guide the children.

Figure 49: placement of the prototype

Results
Plays children came up with:

The plays children came up with and how they moved true through the play phases are shown in Figures 50 and 51.

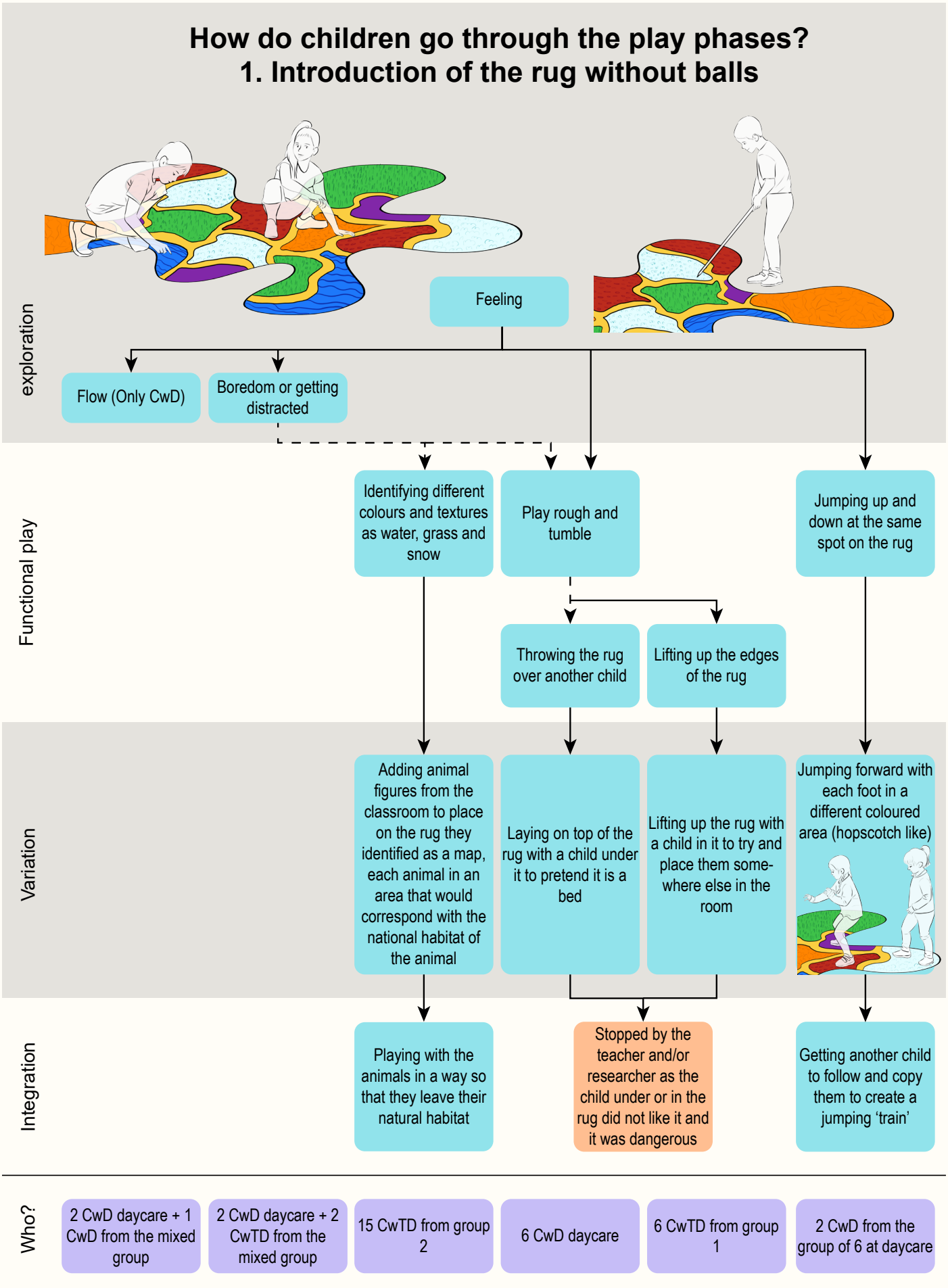


Figure 50: How CwD and CwTD went through the play phases with only the rug.

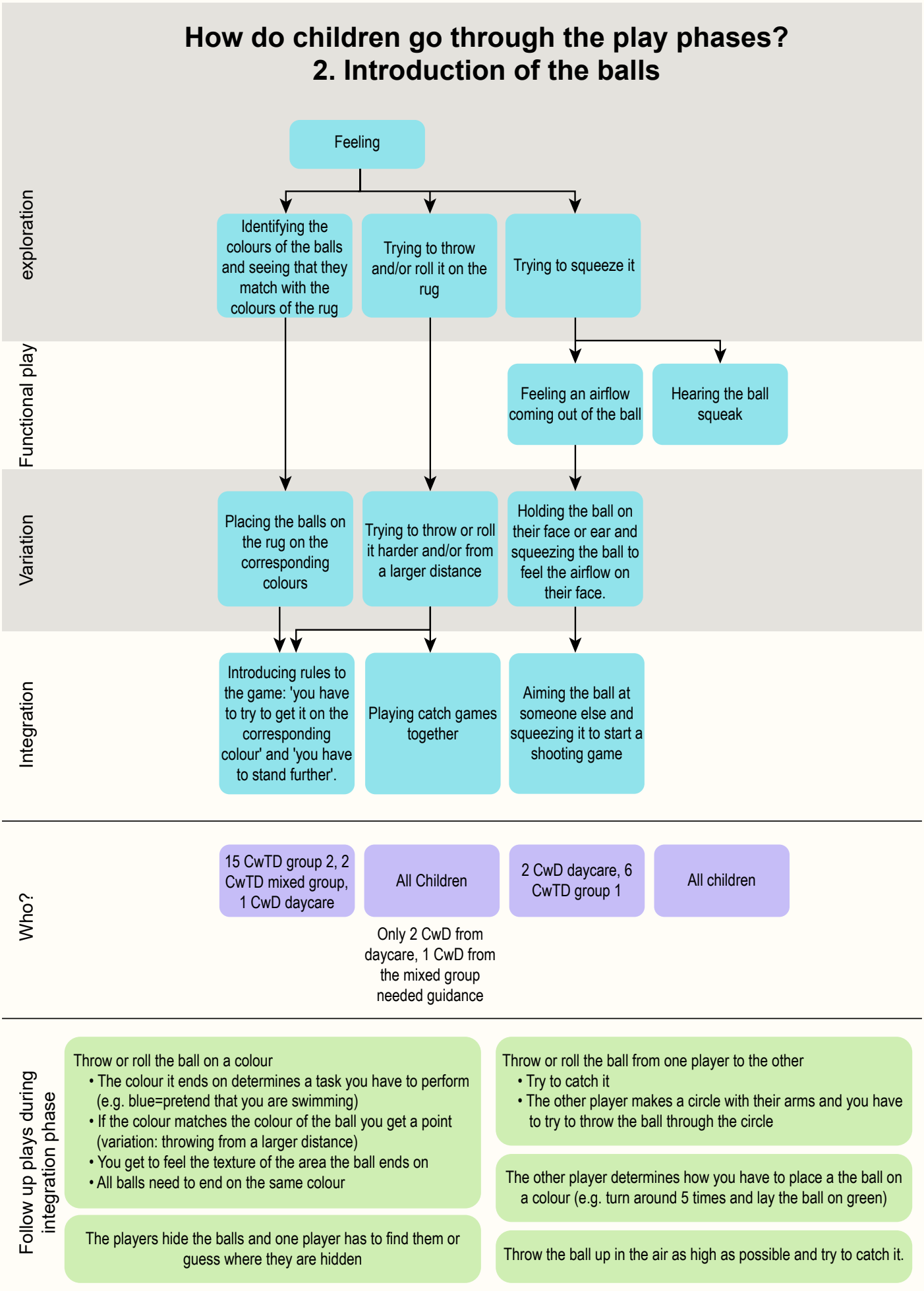


Figure 51: How CwD and CwTD went through the play phases with the rug and balls.

Discussion and conclusions

Table 8 provides an overview of the most important observations, discusses why they happened and what the main takeaways are. Appendix O provides a more detailed explanation of the results per research question.

Table 8: Observations, explanations and take aways testing with children.

What happened?	Why did it happen?	Take away
CwD and CwTD came up with their own ideas for play, however, sometimes the plays were not challenging enough for them.	They sometimes had trouble coming up with new ideas for plays or ways to enrich their play by themselves.	The children do not necessarily need play cards, however, they could be used to enrich their play when they are unable to come up with new play ideas or play combinations.
I expected children to try and stack the objects, however, non of the children did.	The objects did not provide any cues for construction play.	Adding a construction play card could trigger children to come up with new more creative types of play.
CwTD introduced animal figures to play fantasy play on the rug.	The objects did not have features resembling living beings yet, thus they were not recognized as elements that could be used for fantasy play.	Add eyes to the objects to turn them into 'little monsters' and provide a cue for the possibility of fantasy play.
Every child explored the rug and objects in their own way	The sensory elements of the concept trigger curiosity and explorative play	The sensory elements have positive effect on CwD and CwTD and stimulates them to explore.
CwTD easily felt bored when exploring only the rug (without the objects or other elements) whereas most CwD reached a state of flow while exploring the rug.	There were only tactile and visual sensory elements in the rug. Therefore, the CwTD had quickly explored the rug and did not have enough clues for further play, whereas CwD found a state of flow as this level of sensory stimulation was enough for them.	To get the CwD and CwTD to explore the rug on a more similar pace, other sensory elements could be added to the rug. E.g. auditive elements. The rug can also be enriched by adding other elements to stimulate the fantasy play. E.g. a visual of a boat on the blue (water) areas.
Children with a younger DA (3 to 4) had difficulty combining the rug and the balls and preferred to use them separately.	Children with a younger DA are still developing their play development and thus still learning success and team play (Vermeer, 1968; Vedder, 1977). Making it difficult for them to combine several elements at once.	Play cards that also focus on only 1 element should be introduced to the play or play cards that allow for easy adaption.
Children with an older DA (5 to 6) discuss what they can do with the prototype together and come up with ideas for play together.	The prototype naturally stimulates social play (Hughes, 2006) followed by success and team play (Vermeer, 1968; Vedder, 1977). 	The how cards should introduce a small amount of rules to guide parents and younger children, but the number of rules should be limited as to prevent decreasing the social play for children with an older DA.
A few children collected the objects and did not want to share them. As a result, adults had to correct the children and guide them to play together.	The objects are all different stimulating the children to collect all of them. 	Limiting the number of balls even more can stimulate more children to collect the balls, providing more opportunities for parental correction.

The play cards should mainly focus on helping the parents choose/build the play and guiding it. Thus providing them with cards with play element that they can then combine to set up a play. These play elements can be based on the plays the children came up with during the testing.

To make the cards suitable for children, images should be added as not all young children are capable of reading yet. Based on the plays in Figures 50 and 51 and the findings in Table 8, the play cards in Appendix P were made.

7.3 Testing the final concept with PCwD, PCwTD, CwD & CwTD

The most important factors are whether or not the concept functions as intended and if PCwD and PCwTD like to use the product. This subchapter focusses on testing the final concept in a more representative way.

Research questions

What are the emotions the parents experience while using the prototype?
Does the prototype evoke a spontaneous reaction from other parents and children?
Do the parents work together to guide the play for children?
Are the parents able to take a step away from the play and use the conversation cards?

Method

The participants are provided with the prototype and asked to play with their children using the prototype and try to use the conversation cards when the children are playing together. The play is observed using the observation plan in Appendix Q. After the play has finished the parents are interviewed using a semi structured interview and Premo cards (cards with illustrated emotional expressions) (Desmet, 2019) to find out more about their experience with the prototype.

Prototype:

The prototype used for testing consists of the rug in Figure 48, the monsters in Figure 52, the play cards in Appendix P, the conversation cards in Appendix N and the invitation sign in Figure 53.

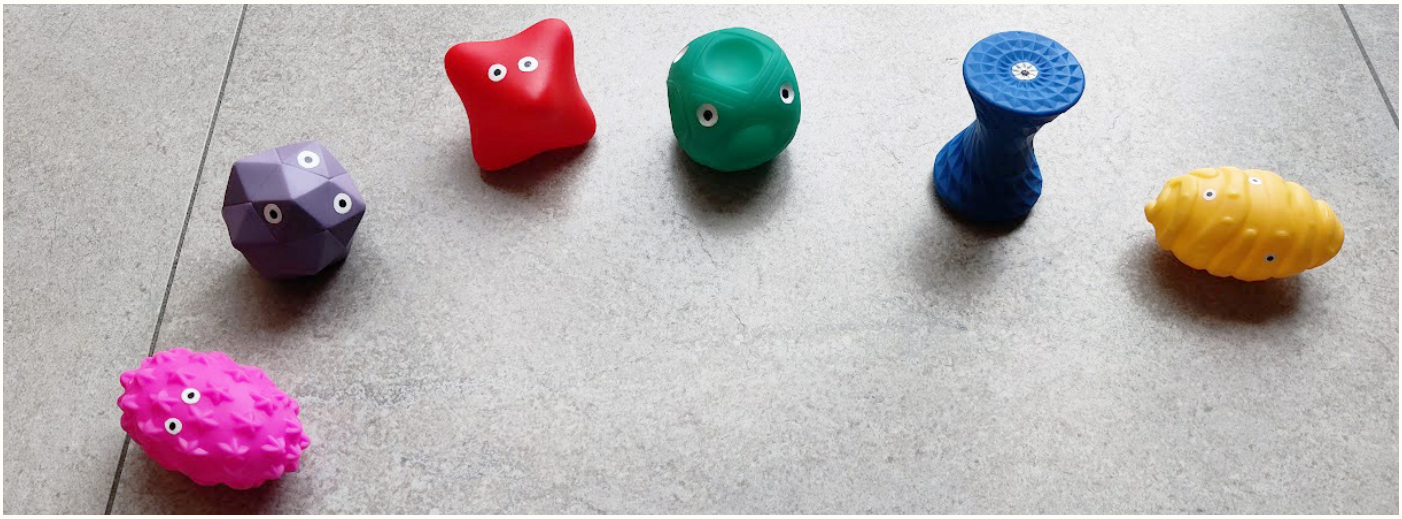


Figure 52: Objects turned into ‘monstertjes’

Figure 53: Physical invitation sign

Test groups:

- 2x PCwD + 2x CwD (location: hall of a special education school)
- 1x PCwD + 1x PCwTD + 5x CwTD (location: playspace in a restaurant)
- 3x PCwTD + 2x CwTD (location: playspace in a restaurant)

Results discussion and conclusion

Figures 54 to 57 illustrate different situations observed during testing.

Figure 54: discussing while the children play

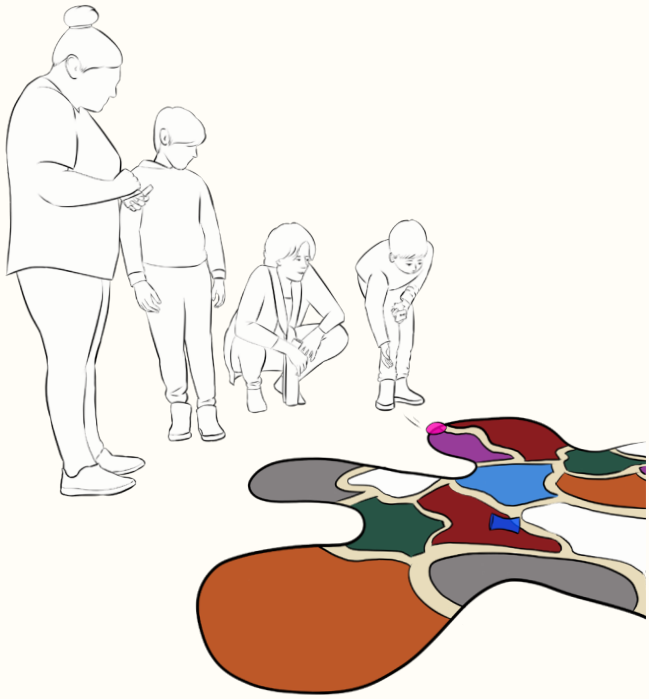


Figure 55: playing together

Figure 56:parents explaining the play

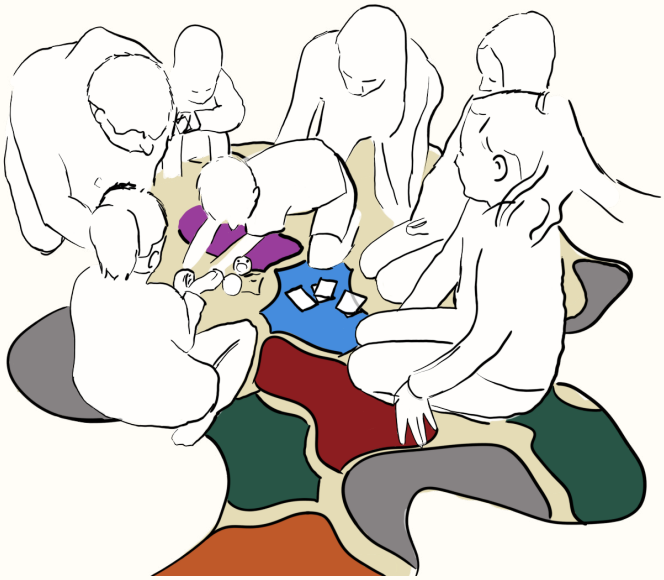


Figure 57: other children joining the play

What are the emotions the parents experience while using the prototype?

All parents express to have mainly felt curiosity. And for this, they all pointed at the premo icon for fascination. This was because they were curious about what the game was, how to play it, and how the other parent would play it but this all in a positive way. On top of that, they expressed to have felt cheerful at the same time as they liked the play and the overall experience. This was for them described by the same icon. One parent, however, also pointed at the icon for desire explaining that they had a bit of trouble with the cards as they found it difficult to match them. Therefore it was quite a bit of a challenge and they would have desired to have more cards they

could use directly. Conclusively, it can be stated that the Voelvlek evokes positive emotions for parents.

The other results of the tests were processed per research question using the What, So what, Now what method (Rolf, Freshwater & Jasper, 2001). This is a reflection method making use of the aforementioned questions. Tables 9 to 11 display this.

Does the prototype evoke a spontaneous reaction from other parents and children?

Table 9: Observations, discussions and conclusions regarding spontaneous interaction

What	So what	Now what
Many CwTD came to ask what game was being played and if they could play along. Figure 57 shows a situation in which other children joined in. They also picked up monsters that had flown away to bring them back to the participants of the research. Lastly, they also pointed the play out to their parents.	This shows that the Voelvlek does stimulate curiosity and spontaneity in children.	It is proven that the spontaneity in children is increased and contact is stimulated by the prototype.
Other parents were curious about the play and prototype but did not join the play.	The prototype and play intrigued them causing them to ask questions, but they were tired from the holidays and wanted a break from their children. On top of that, the monsters did not fly away far enough to reach the parents who were at a distance, thus the parents were not stimulated enough to join.	Use bouncier monsters. (The shape of the monsters causes them to move unpredictably, however, they often still tend to stay near the rug as they are not bouncy)

Do the parents work together to guide the play for children?

Table 10: Observations, discussions and conclusions regarding guiding the play

What	So what	Now what
The parents discussed how they could match the cards (Figure 54) or what the rules of the game were (Figure 56). Causing them to set up the game together and learn about each other's values/boundaries during play. As well as what the children liked.	Due to the mixing and matching of the play cards, there are no official set rules and thus the game and rules have to be defined during the play where the two parents also take on the role of referee. This causes them to communicate about the boundaries they set and find common ground. Finding common ground is essential in defining social relationships and increases social affiliation (Enfield, 2006; Enfield, 2013).	Not having a ready-made but mix-and-match play works well to start easy discussions about the play and stimulates parents to find common ground helping them to define their social relationship.

Are the parents able to take a step away from the play and use the conversation cards?

Table 11: Observations, discussions and conclusions regarding conversation cards

What	So what	Now what
The parents barely used the conversation cards.	The parents were enjoying the plays and focused on the play cards. Due to that, they forgot about the conversation cards. As a result, the parents remained involved in the play (Figure 55). This decreases the independence of the children and decreases the social development of the children (Obradović, Sulik & Shaffer, 2021). On top of that, the parents do not reach a deeper level of conversation.	The conversation cards should be integrated more within the play. Combining the play cards and conversation cards could be a way to do this.
When the parents were discussing what play cards to combine or were using the conversation cards, they could distance themselves from the play (Figure 54).	The children continued playing with only incidental questions and disturbances for the parents. Allowing the parents to step away from the play.	See above.
The parents sometimes involved the children in the conversations based on the cards.	This created a learning experience for the children as well as well as increasing the contact between the parent and child who do not know each other.	Formulate the conversation topics to be more open: e.g. 'What is everyone good at?' Instead of 'What is your son/ daughter good at?'.

During the testing, other interesting findings came to light allowing for further development of the Voelvlek. Appendix R gives a more detailed overview of these findings.

8. Conclusions and recommendations

This chapter discusses if the Voelvlek satisfies the design vision (Figure 58) based on the final research with parents and children (Chapter 7.2.2) and makes recommendations for further research.

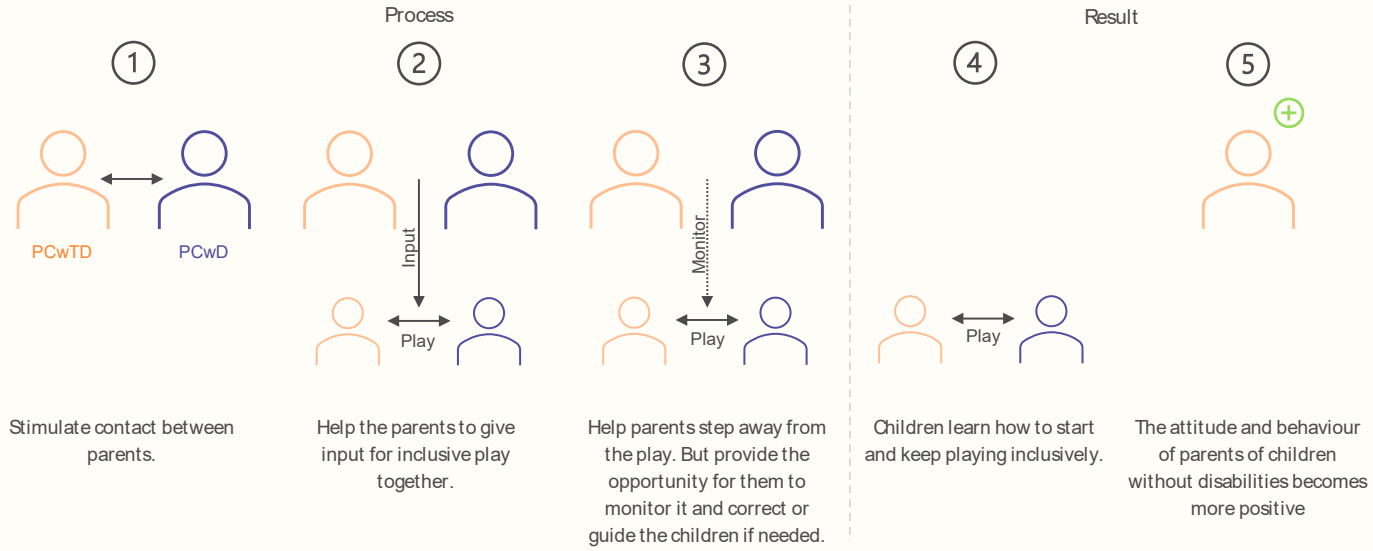


Figure 58: Design Vision

8.1 Vision satisfaction

1. Chapter 7.2.2 shows that the Voelvlek stimulates spontaneous interaction of CwTD and PCwTD. However, further research should be done during a period with fewer holidays and with monsters made of bouncier materials to see if the spontaneous interaction of PCwTD can be further elicited.
2. It was seen that the PCwD and PCwTD were able to provide input for the children's play using the play cards.
3. Parents forgot to step away from the play as they forgot to use the conversation cards but were able to step away when using them. Further research should be performed on whether the proposed recommendation of combining the play and conversation cards helps with this.
4. During the research in Chapter 7.2.1 the CwTD in the mixed group required guidance to play inclusively but started including the CwD more over time. Further research should be performed over an extended period to validate this finding.
5. During this thesis, it was not possible to test the Voelvlek with a CwD and a PCwTD at the same time. This was caused by overstimulation of the CwD as they had not had time to get used to the prototype before and were in a busy environment. This is a large limitation of the final test. Respectively, future research should explore the PCwTD - CwD relation and learning experience further.

It was also seen that PCwTD and PCwD together corrected their children when needed, found common interests of the children and communicated about values regarding inclusive play which are all part of the set learning experience of the prototype.

8.2 Further recommendations

The Voelvlek focuses on PCwTD with weakly held attitudes towards CwD (Chapter 2.4). More research should be performed on PCwTD with strongly held negative attitudes, their needs and the effect the Voelvlek has on them.

Additionally, as the weather did not allow for outside testing, all tests with the final concept were performed indoors. This influences the person-product interaction as well as the interactions between PCwTD and PCwD. Accordingly, it is recommended to test the Voelvlek in its intended context: at playgrounds and other neighbourhood playspaces.

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