

June 11, 2021

Bachelor Project



Underutilized areas in Groningen

Spatial development in underutilized areas to promote children's well-being based on children's perceptions and preferences



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Word count: 8935 (summary & references & appendix included)

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Summary

Recent studies show that the overall health and mental well-being among children is declining, with low participation in outdoor activities being one of the main reasons. Low participation in outdoor activities among youth leads to higher rates of obesity and depression. The spatial urban built environment is found to directly influence the health and well-being of children, by either promoting or constraining them to participate in outdoor activities. Increasing the wellbeing levels of children is a great societal concern, which can be resolved by the well-utilization of empty areas. Through quantitative and qualitative methods, this research investigates development preferences and perceptions on underutilized areas in Groningen so that children's wellbeing is promoted. The main research question of this report is: "How could underutilized areas in Groningen be developed in order to support the wellbeing of the children based on children perceptions and preferences, in a temporary or permanent way?". To answer this main research question a combination of research methods was applied. For the underutilized areas in Groningen to be located, an online desk research followed by an observational approach occurred. Different criteria were set to verify whether the area is indeed underutilized and relevant to this thesis. After locating the underutilized area, a Questionnaire was conducted to children living in proximity of the area mainly focused on their preferences and perceptions on spatial features aimed for their wellbeing.

It was found that children living in proximity of the underutilized area do not spend the recommended time practising outdoor activities, with the main reason being the inexistence of specifically designated areas for them to practise their favourite activities. Based on that and the local needs and resources, it is suggested that the underutilized area is developed to a childfriendly site where children can practise outdoor activities and socialize with friends. For specific spatial features, the preferences of local children were incorporated with the current data retrieved by scientific literature review. A strong link between their preferences, their favourite outdoor activity and whether there already exists a designated area to practice these outdoor activities was found. To conclude, underutilized areas appear as high potent spaces for spatial development. Incorporating children's preferences and opinions upon spatial features that are aimed for their own wellbeing brings value and increases the overall quality of the spatial plan.

Keywords: *underutilized areas, children's wellbeing, spatial development, physical and mental health, childfriendly site, promotion, spatial features, perception and preferences*

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Chapter 1. Introduction

1.1 Background

The progressive urbanism development and the increase of population density in the modern world have caused a decline of vacant urban spaces (Pluta, 2019). Empty areas are becoming limited in supply and planning processes are being applied to prevent land-use conflicts, maximize efficiency, satisfy local needs, and create a healthy livable urban environment for every age. Due to the high rate of increased density and urbanization, modern cities face serious challenges in terms of urban and sustainable developments. Empty spaces or as they will be mentioned throughout the research, underutilized areas, are becoming progressively popular subjects of planification in the context of urban development and densification (Gunwoo, 2016; Kim, Miller, and Nowak 2018). Urban underutilized areas are a crucial resource and a functional component of the city's functioning that can lead to significant benefits and should therefore be well-managed to have a positive impact on a large scale. These areas offer new opportunities for creative usage and alternative spatial developments which can be beneficial to the heavily dense and built-up city environments (Gunwoo, 2016).

Well-utilization of these empty areas is beneficial in a social, ecological, political, and economic aspect. Different aspects create different development opportunities. The proper use of these areas is determined by specialists in the spatial planning field. The main goal of spatial planners is to properly organize and manage these areas while considering social expectations and local needs (Gunwoo, 2016). The well utilization of empty space is presented as a sequence of planned developments with the only aim being the elevation of the city in every before mentioned aspect. Utilization of these areas leads to a change in functionality and value. Depending on the profile of the spatial developments in these areas, different values and attitudes towards the space are created.

This research will be focused on spatial development that aims to elevate the social sphere of the city. Care for social aspects of the civic areas is manifested by the adaptation of urban development to the needs and expectations of its citizens (Pluta, 2019). Therefore, initiatives that are based on residents' needs should be the points of reference in shaping the underutilized areas. This approach leads to a more dynamic and inclusive urban development in which the locals would be the contributors and users.

Either temporary or definite development can occur in these empty spaces. Temporary developments provide the opportunity to design, test, and recognize the desired future outcome (Németh and Langhorst, 2014). Therefore, having an explorative nature. Temporary developments can catalyze communities around common social goals that provide local needs and interests (De Smet, 2013). On the other hand, definite developments are well-planned beforehand, costly, and not as flexible as the temporary developments. The future availability of the empty area is the main factor that determines whether temporary or definite development should take place.

The interrelation between the urban environment and the well-being of the children that live in it, is well studied among scholars (Van Loon, 2011). The children's well-being is influenced by these variables: physical activity, mental wellbeing, and accessible activities. (Wright, Williams, Hargrave and Dohna, 2017). These variables are directly interconnected with what the surrounding urban environment has to offer to the children. Planning and managing the urban environment for serving and promoting the well-being of children is based on a systemic planning approach that improves children's mental development, health, and access to activities (Wright, Williams, Hargrave and Dohna, 2017). Children are often considered as an indicator species that reflect the quality of a city. By building a successful city for children, we will have a successful city for all people (TheGuardian, 2014). Emphasizing and considering children's needs and preferences, will help in solving urban challenges, leading to cities that are better for everyone (Wright, Williams, Hargrave and Dohna, 2017).

1.2 Theoretical and Societal Relevance

Child-friendly spatial planning is an upcoming field that represents approaches to planning and designing cities that improve children's quality of life. The advantages of a child-friendly city go well beyond children. The ease of getting around independently, the accessibility the city has to offer, the amount of time children spends performing outdoor activities and the level of contact with nature are strong measurements of how a city is performing in every societal sphere.

Well-utilization of underutilized areas within a city is on the main scope of every planning instrument, either governmental or private. Incorporating children's preferences and perceptions on spatial features aimed for their physical and mental wellbeing is an asset spatial planners have to consider when developing spatial projects.

The purpose of this research is to explore perceptions and preferences children have upon spatial developments in underutilized areas aimed for their physical and mental wellbeing. This study seeks to generalize and contextualise the findings of the case study within the larger scale of research. The results of this study may have implications to the planning process and the inclusion of children preferences on future child-friendly areas. With children wellbeing levels being decreased due to the urban build environment, developing child-friendly areas where they can practise their favourite outdoor activities and socialize with friends is of great importance to society as a whole. Locating and utilizing underutilized areas in the city of Groningen adds value and relevance in a local level. Childfriendly developments in such areas bring up the quality of a city, by targeting children needs and making usage of unexploited areas.

1.3 Research Problem

This research aims to explore how underutilized areas could be used to promote mental and health well-being to children. Children recommendations and perceptions are considered on a local level too. The research project will be conducted on an underutilized area in the city of Groningen.

This all leads to the main research question:

“How could underutilized areas in Groningen be developed in order to support the wellbeing of the children based on children perceptions and preferences, in a temporary or permanent way?”

The sub-questions following the main research question are:

- “ Which are the underutilized areas in Groningen that appear as a potential location for temporary or permanent development towards the well-being of the children?”
- “ How relevant is the development of a child-friendly area in the underutilized case study?”
- “ Which spatial features that aim to increase their health and mental wellbeing, do children prefer?”
- “ Will future child-friendly spatial developments in the underutilized area invite children into using these areas more often?”

1.4 Thesis structure

Firstly, the theories and concepts that this research is based on, will be furtherly discussed, and connected with each other. These concepts and theories will be discussed in the Theoretical Framework chapter. After the Theoretical Framework chapter, the methodology, data analysis and operationalization will be introduced in chapter 4. In the next chapter the results will follow, which will lead to the conclusion and discussion of this research. As the research is a case study and generalization is a complex topic, the research methods and the process will be evaluated upon limitations and suggestions for future research. At the end of the report, the appendices and the references will be included.

Chapter 2. Theoretical Framework

2.1 Underutilized areas

The term underutilized areas will be used throughout the research paper; thus, it is important to define its meaning in the context of this research. Whether described as 'empty', 'vacated' or 'underutilized', these areas are described as spaces that are unbuilt and underdeveloped (John, 2014). Underutilized spaces are zones in which spatial development is limited or non-existent. These areas are spaces that have become obsolete because of abandonment of the function that was defined previously or never had a defined function (Krivy, 2013).

The underutilized areas are spaces that minimal to almost no spatial interventions have taken place throughout the years and it has no sentimental value to the locals of the city. For the context of this research, the underutilized areas are neither used for activities such as markets and festivals nor recreational purposes. Several additional criteria for the underutilized area to be relevant to the case study are discussed in the methodology chapter.

2.2 Importance of well-being among children

Wellbeing is generally perceived as the quality and standard of people's lives (Statham & Chase, 2010). Childhood wellbeing can be defined in a lot of different ways but at its core, it is a state that is achieved when children fulfil their personal physical and mental needs. Most definitions of childhood well-being emphasize the wide complexity of this concept and include indexes that contemplate several domains of the quality of life and functioning. Including: physical, mental, and behavioral health; social and emotional health; safety and the physical environment; economic security and academic/intellectual outcomes (Lou, Anthony, Stone, Vu, & Austin, 2008). Studies have shown that in the early years of a child's life, well-being has a fundamental role specifically on the physical, mental, and social health state of the person they will grow up to be (Patalay & Fitzsimons, 2016). In simpler terms, well-being is recognized as the quality of life. Therefore, it is considered an important factor that needs to draw a lot of attention and resources.

International health organisations mention that various key drivers are associated with the children's well-being (UNICEF, 2012). A high level of children's well-being converts to healthy physical and mental health, happiness, the feeling of achievement and inclusion in society. Meanwhile low levels of well-being are interrelated with mental health disorders such as severe anxiety and depression. These disorders are found to negatively impact the relationships with friends and family members (Williams, 2019). Well-being in the context of this research will be mainly focused on the physical and mental health of children.

2.3 The urban built environment and the wellbeing of children

The urban built environment that surrounds and is part of the children's everyday life, either promotes or restricts the children's well-being. The quality and the representation of a child's urban built environment can either cause or prevent obesity, illness, and mental health related problems. Therefore, a well-planned environment is vital for children to attain

high levels of physical activity and mental health. Various factors influence physical activity among youth, the built environment being considered as one of the most important factors that could be influenced by spatial planning (Figure 2.1). Studies show that outdoor sport facilities and organized activities can help to increase physical activity levels, develop stronger immune systems, and decrease stress levels (Godbey, 2009). Areas that are specifically designated for children, that are accessible and provide a mix of uses, invite children to participate more in physical activities and social interactions. Different methods are used to increase the number of children and families, walking, cycling, and performing outdoor activities. A successful case in Bangalore, shows that by redesigning and opening 14 new playgrounds and parks, 1400 children got access to outdoor facilities (Wright, Williams, Haragrave and Dohna, 2017). A study conducted a year later in Bangalore, reflects that the physical health levels of the youth were increased sharply compared to the data collected before the introduction of the playgrounds and parks.



Figure 2.1: Factors influencing physical activity in communities (Levy, 2018)

2.3.1 Urban built environment and physical wellbeing on children

One of the most common physical health problems that children go through at a young age, is obesity. Obesity numbers among youth have increased sharply in the past two decades and studies show that the numbers have increased by spatial features found in the urban modern built environment (Levy, 2018). It is caused by complex and various reasons, with insufficient physical activity being a pivotal factor. Physical activity among youth is restricted when children lack the opportunity and space to perform outdoor activities. In their article (Bento & Dias, 2017) mention that a neighborhood that lacks urban built environment features such as bike lanes, safe walking paths, open areas, playgrounds, and outdoor sports facilities restrict physical activity among youth, as they do not have the necessities and areas to perform outdoor and physical activities.

On the other hand, studies have shown that the presence of playgrounds, basketball/football fields and biking/walking lanes in a neighborhood promotes physical activity in children and lowers the phenomena of obesity (Bento & Dias, 2017). Parks and playground designs play an important role in the physical activity pattern of children (Van

Loon, 2011). Renovated and upgraded playgrounds are also found to be used more frequently by children than outdated playgrounds. Incorporating elements and facilities that are easily used by children such as swings and climbable features playground areas may appear more conducive to be used (Kytta, 2004). Diversity of features and facilities also provide variety for each child that has different preferences and ages for them to practice outdoor activities of their liking (Walsh 2006).

2.3.2 Urban built environment and mental wellbeing on children

Urban built environment features also influence the mental health of children. Research over the years has shown that children performing outdoor physical activities and socializing with friends tend to be less stressed, anxious, and socially isolated. The urban built environment indirectly either promotes or restricts mental wellbeing by either offering areas where the children can perform outdoor activities and socialize with friends or not. Studies on this theme discovered that children living in areas with no green spaces have a 44% higher rate of diagnosed anxiety disorders than those living in areas that are surrounded by more green scenery (Sefcik & Kondo, 2019). Culminating that green scenery is an important urban built environment feature that promotes mental wellbeing in children.

The shape of the urban built environment also determines whether children can practice social interaction in a safe domain. Parks and playgrounds are the main urban built environment features that provide the safest place for children to socialize and practise outdoor activities. Children who socialize and learn to practice outdoor activities with other children at a young age are found to develop better teamwork and interpersonal qualities (Bento & Dias, 2017). In a study where over 29000 children participated, it was found that children spending at least half an hour per week practicing outdoor activities were associated with a lower chance of high psychosomatic symptoms, compared to those who did not practice any outdoor activities (Piccininni & Michaelson & Janssen & Pickett, 2018).

2.4 Conceptual Model

The relationships between the theories and concepts are visualized in Figure 2.4.

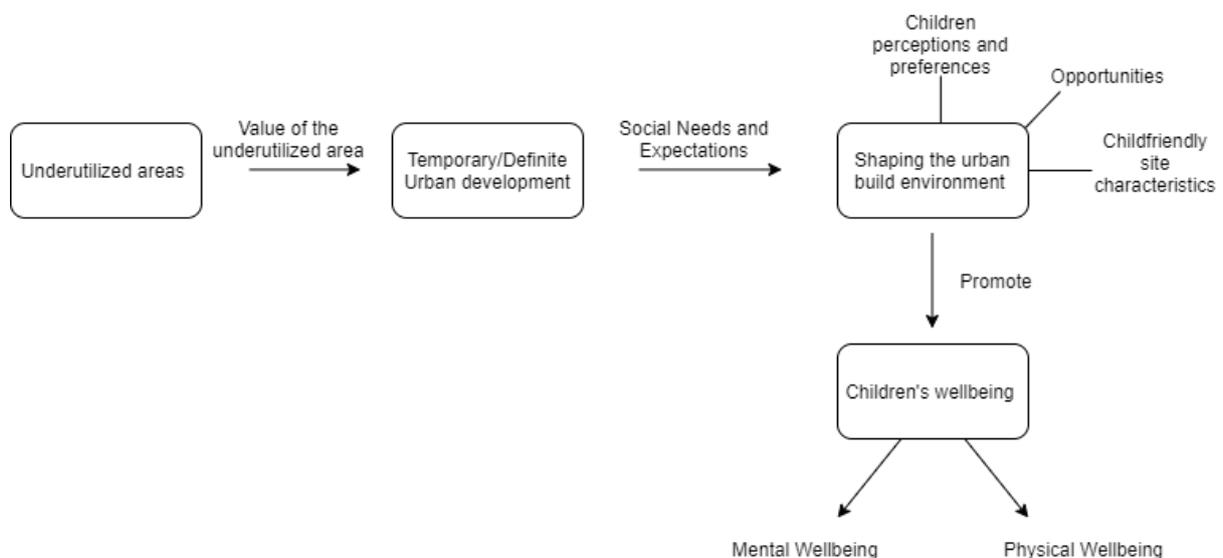


Figure 2.4: Conceptual Model

These underutilized areas are often subject to temporary or definite development, which depends on whether there are future spatial plans for that area or not. Urban development happens for various reasons, local social needs being one of them. Shaping the urban build environment to promote and satisfy the health and mental wellbeing of children is a social need that has been in the hotspot and the planning agenda of every city's bureau. When shaping the urban build environment to promote children wellbeing, the children's perceptions and preferences, the different opportunities and childfriendly site characteristics have to be considered.

Chapter 3. Methodology

3.1 Mixed Methods

A case study is chosen to narrow down the scope and have a smaller domain, which consists of fewer data and less complexity when analyzing them. In his article (Flyvbjerg, 2006) states that one of the advantages of a case study is that it concerns real life situations and tests viewpoints concerning local phenomena. A smaller domain of focus leads to a better quality of data and data analysis as case-study research goes more in depth of things. The selection of a case study also helps with the technicalities and quality of the qualitative approach this research has.

To answer the main research question and the sub-questions a combination of qualitative, quantitative, and observational data is acquired. The quantitative and observational data approach are used to determine which areas are underutilized and relevant to the study. An online desk research combined with a field observation explored which areas appear as underutilized in the city of Groningen. A Questionnaire was then conducted to children that live in proximity of the area explored qualitative insights on children's perceptions and spatial development preferences. The qualitative approach appeared to be beneficial for the quality of this research as it incorporated children's insights, perceptions and creativity on spatial development aimed for their wellbeing. Due to Covid-19 measurements in the Netherlands, interviews with children were not possible and the Questionnaire appeared to be the best second method to ask open questions. The localization process of underutilized areas in Groningen was not influenced by the Covid Measurements. Suspicion of underutilized by the online desk research and confirmation by field observation, led to accurate and useful data. Performing just an online map dataset desk research was considered, but that would lead into fully relying on an online map dataset that could be outdated.

For the underutilized area to be relevant to the case study, several criteria should be checked. The first criterion is the proximity between the underutilized area and the urban neighborhoods. For the underutilized area to serve the purpose of this research, it must be accessible and have a rather short distance from the surrounding urban neighborhoods. By being accessible, in this case, it is meant that children could bike or walk to the area with relative ease and safety. Figure 3.1 summarizes the physical and mental criteria that need to be fulfilled so that an underutilized area in Groningen is relevant to this case study. The second criterion regarding the relevance of the area to the urban environment, is the neighborhood demographics. For the chosen underutilized area to be relevant, the urban neighborhoods around that area must be neighborhoods where families with children live. To determine whether these underutilized areas are subject to a definite or a temporary spatial development, future spatial projects of that area must be studied and taken into consideration.

What makes an area underutilized and relevant to this research?
<p>Physical criteria: No spatial interventions</p> <p>No activities (ex, markets, festivals etc.)</p> <p>No significant green scenery (that can be used for Recreational purposes)</p> <p>Proximity between the underutilized area and Neighbourhoods</p> <p>Accessible by bike/walking paths</p>
<p>Mental criteria: No sentimental value to the locals</p> <p>Not used for recreational purposes</p>

Figure 3.1: Criteria for an area to be underutilized and relevant to the research.

Table 3.2 below shows in detail the information, data obtaining, documentation and analysis of data.

	Information	How to obtain data	Documentation	Analysis of data
How could underutilized areas in Groningen be developed in order to support the wellbeing of the children based on children perceptions and preferences, in a temporary or permanent way?	Definition of underutilized areas, location of these areas in Groningen, definition of spatial developments that promote health and well-being of children	Mix of analysis: PDOK Viewer Academic Literature Descriptive statistics	Data will be acquired by the collection of all the sub questions	
Sub-question 1: Which are the underutilized areas in Groningen that appear as a potential location for temporary or permanent	Definition and localization of underutilized areas in Groningen relevant to the research case	PDOK Viewer Field Observation and observation checklist Neighbourhood demographic statistics	Online desk documentation Observation checklist	Desk analysis, usage of online data

development towards the health/well-being of the children?		Municipality future planning data		
Sub-question 2: How relevant is the development of a child-friendly area in the underutilized case study	Explores whether the development of a child-friendly area is needed	PDOK Viewer Questionnaire	Online desk documentation Questionnaire	Usage of online map datasets and qualitative data from the Questionnaire
Sub-question 3& 4: Which spatial features that aim to increase their health and mental wellbeing, do children prefer? Will future child-friendly spatial developments in the underutilized area invite children into using these areas more often?	Qualitative data on the children spatial development preferences and whether they would make use of such a child-friendly area more frequently	Questionnaire	Questionnaire was filled in by children of a primary school (age 9-12), data was configured and analysed manually	The data acquired was analysed by manual descriptive statistics and open end answers.

Table 3.2: Overview scheme of the data collection instruments.

3.2 Data Collection

3.2.1 Online desk research

To locate the underutilized areas in Groningen the geoportal online software with the latest municipality data PDOK Viewer (<https://www.pdok.nl/viewer/>) was used. For an area to be suspected as underutilized, several datasets were used in the PDOK Viewer to acquire essential data and background information. The area should not be part of a **Protected area** (Dataset: Protected areas – Provinces), **Cultural heritage** (Dataset: Cultural Heritage), **Provincial Monuments**. Other criteria that are processed through PDOK Viewer, is by checking whether **buildings** already exist or not. The suspected underutilized areas should not have buildings, excessive green scenery, organized activities and generally, they should not have a purposeful spatial development. After applying all the datasets and analysing the data, two suspected underutilized areas were noted down (Figure 3.1 & Figure 3.2 & Figure

3.3).

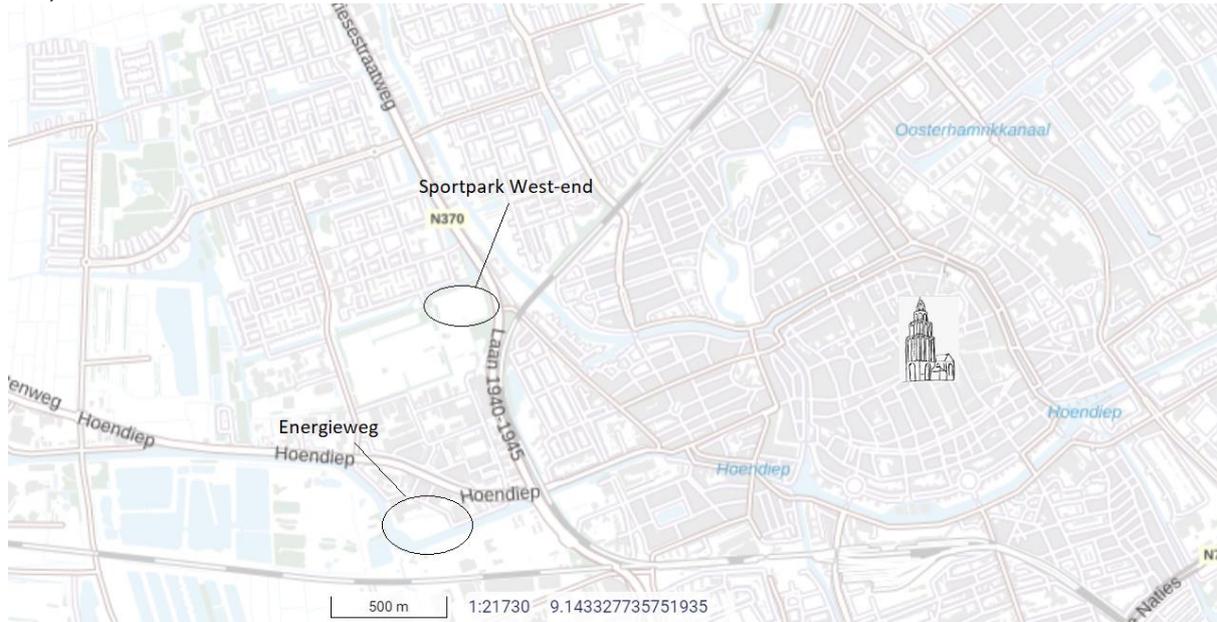


Figure 3.3: Location of the potential underutilized areas

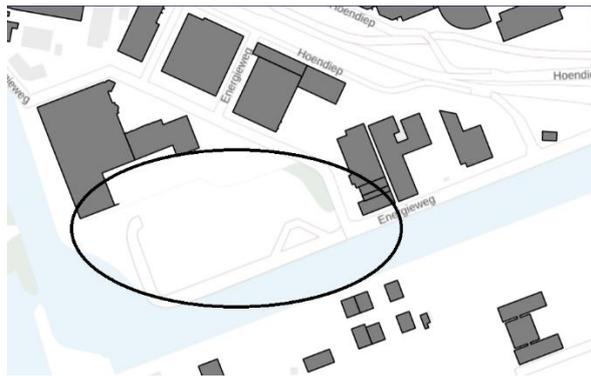


Figure 3.4: Energieweg underutilized area



Figure 3.5: Sportpark West-end underutilized area

To acquire data on accessibility and distance between the underutilized areas and urban neighborhoods, transportation and bike road/walking path maps were accessed. These maps were available on the PDOK Viewer dataset map (<https://www.pdok.nl/viewer/>). Both suspected areas were accessible by walking and cycling paths as seen in the PDOK Viewer maps. Both suspected areas are positioned in urban neighborhoods.

To explore whether families with children live in the surrounding neighborhoods of the underutilized areas suspected, a small online desk study whose goal is to find demographic data of the surrounding neighborhoods took place. For this purpose, the online Dutch neighborhood statistic site was accessed and made use of (<https://allcharts.info/>). Both suspected areas were surrounded by service areas where families with children were registered and thus, they satisfy this criterion (Figure 3.6 & Figure 3.7).

Population	Value	Unit	Year
Inhabitants	2.265	number	2020
Men	1.150	number	2020
Women	1.115	number	2020
Ages 0 - 15	180	number	2020
Ages 15 - 25	530	number	2020
Ages 25 - 45	860	number	2020
Ages 45 - 65	445	number	2020

Figure 3.6: Surrounding demographics of Sportpark West-end area

Population	Value	Unit	Year
Inhabitants	4.865	number	2020
Men	2.265	number	2020
Women	2.595	number	2020
Ages 0 - 15	790	number	2020
Ages 15 - 25	740	number	2020
Ages 25 - 45	1.020	number	2020
Ages 45 - 65	1.170	number	2020

Figure 3.7: Surrounding demographics of Energieweg area

Whether a temporary or a permanent development could take place in the underutilized areas selected, manual desk research occurred. The goal of this desk research is to find out whether an urban plan for the areas chosen already exists, if it does, a temporary urban development approach will be selected to support the health and well-being of children. If an urban plan for these areas does not exist, either a temporary or a permanent approach could be selected. Information about urban plans concerning different Groningen areas, were found on the municipal website of Groningen (Gemeente Groningen Projects, 2021).

A confirmation by field observation was held to finally confirm that the suspected areas are indeed underutilized. The field observation includes an observation checklist which is found in the Appendix 1. The observation checklist was mainly based upon the definition and literature research concerning the definition of underutilized area. The field observations took place on the 30th of March 2021. Field observations and observation checklists were done in two different locations that were suspected as underutilized by the online desk analysis.

3.2.2 Questionnaire

The Questionnaire was conducted at the Openbare Jenaplan Basisschool (OJBS) Petteflet primary school that is in the proximity of the underutilized area case chosen in the city of Groningen (Figure 3.8). Due to Covid measurements and precautions, the whole process was constructed and planned so that there is minimal physical contact between the researcher, the primary school children, and the schoolteachers.

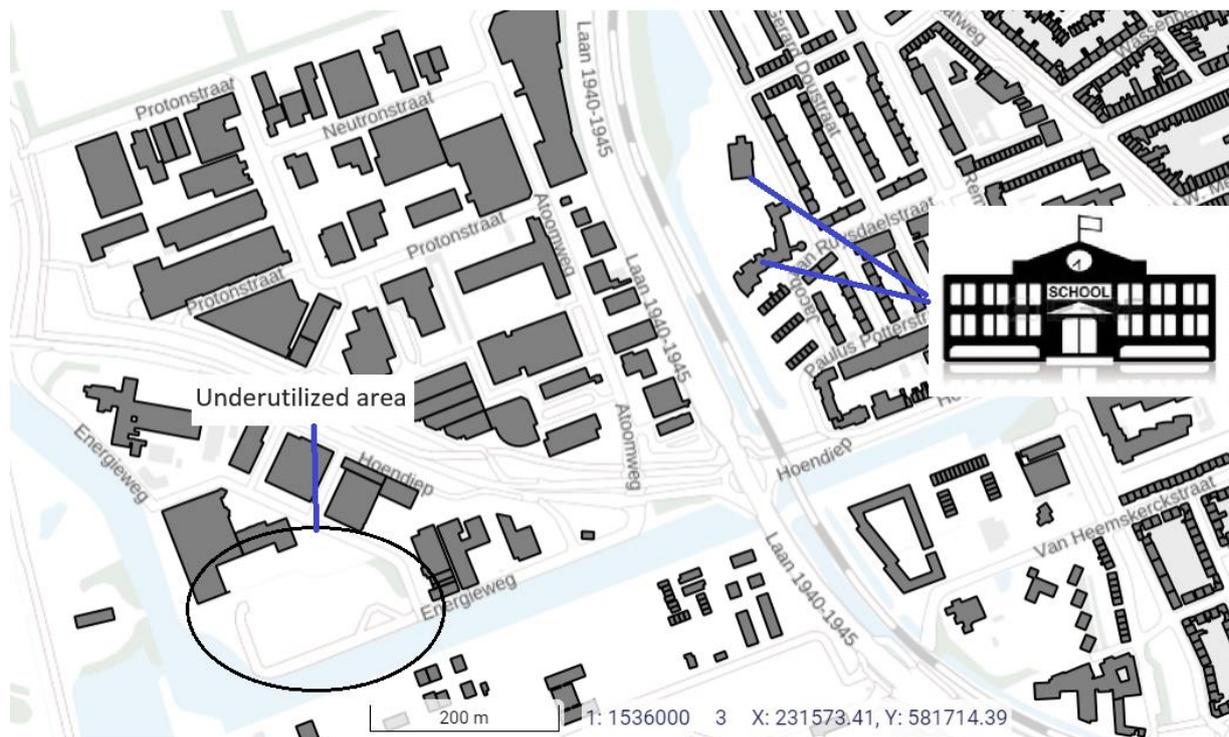


Figure 3.8: Location of the underutilized area chosen and the primary school.

The first contact with the primary school was achieved via a phone call. After briefly introducing the aim of the research, the primary school was willing to help in the process of conducting the Questionnaire. On the 14th of April, the researcher had contact with a teacher at the primary school and gave him the hard copies of the Questionnaire written in Dutch. The teacher throughout the whole school day spread the Questionnaires to children aged from 9 to 12 years old. At the end of the school day, the teacher was responsible to gather all the filled Questionnaires, contact the researcher and return the filled versions to him. The Questionnaire in both English and Dutch is available in Appendix 2.

For the research to be limited and focused, boundaries regarding who to fill in the Questionnaire were set. The Questionnaire is partly theory driven, questions aimed to explore the amount of time children spend performing outdoor activities are based on theoretical background and studies. The age focus group was children aged from 9 to 12-year-old, including 9 and 12-year-old. Studies show that children aged 9 to 12 tend to participate in outdoor activities and use playgrounds and sport outdoor facilities on a large scale (Nordbakke, 2018). By targeting and conducting the Questionnaire to a primary school that is in proximity with the underutilized area chosen, the probability that the Questionnaire is filled in by children that live nearby the underutilized area rose. Out of 36 Questionnaires filled, 27 respondents were analyzed and included. Nine participants were left out of the analysis process, as the respondents were not aged from 9 to 12 years old or did not live-in proximity of the chosen underutilized area. Out of 27 respondents, 15 of them were males and 12 of them were females.

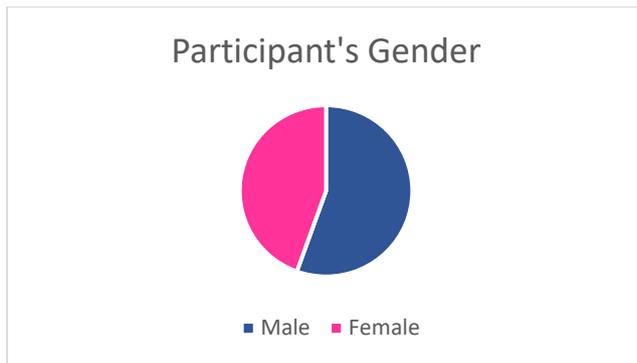


Figure 3.6: Participant's Gender

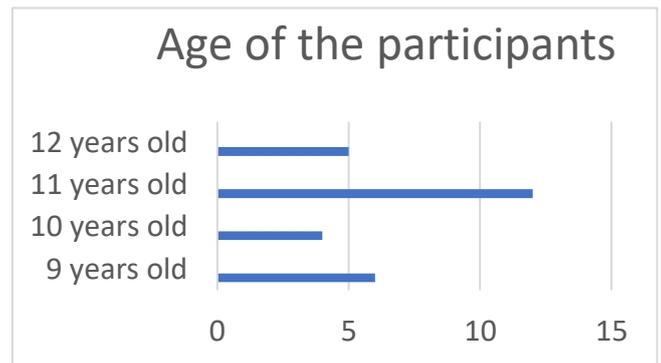


Figure 3.7 : Participant's Age

3.2.4 Ethical Considerations

As there was no interaction between the researcher and the Questionnaire participants, it could be the case that some of the questions were miss conceptualized and answered out of context. The Questionnaire participation was completely voluntary, and the participants could stop filling the Questionnaire at any point. The Questionnaire is structured so that anonymity is preserved, the data are confidential and only relevant to this research.

Concerning ethical consideration on the researcher's positionality in this theme, the researcher is an outsider of this research field. With that said, objectivity towards analyzing and generalizing data was aimed, but sometimes it was challenging to put into the theme context children's answers and statements. This phenomenon was specifically noticed on open-end questions, where children had the opportunity to be subjective and express themselves more freely. Most of the open questions were answered with simple words minimizing the potential language issues.

3.2.5 Analysis

After the Questionnaires were filled and collected, the data was manually translated from Dutch to English and transported into an datasheet. The Excel datasheet was manually analyzed via descriptive statistics, mainly because the data collected is straight forward and simple to analyze. The manual analysis was focused on correlations between different variables. The main correlations and variables that were studied are:

- The qualitative/open end answers the children gave regarding spatial development preferences.
- Favorite outdoor activities and whether there are current specific areas for these activities to be practiced.
- Relationship between how needed an outdoor facility place is and whether the children would spend more time on a newly built facility.
- Whether they prefer an area to socialize with friends, practice outdoor activities, or both.

Chapter 4. Results

4.1 Case study, underutilized area in Groningen

The area that this report will be based on, is an underdeveloped area situated West of Groningen and is part of the Hoendiep neighborhood. The area hold no sentimental value to locals as it was never part of a spatial development or historical remark. From the field observation that occurred, it was noticed that the area was lacking spatial development, but some existent green scenery exists. The amount of green scenery is not considered an issue that could restrict spatial development in that area. On the contrary existing green scenery can be beneficial for spatial development that is aimed to interact and be used by children. The availability of green scenery is found to significantly decrease the children's stress levels (Sefcik & Kondo, 2019). Considering the location and the nature of the area, spatial development aimed for children will increase value and usage on the local social sphere. Spatial developments in this site will change its functionality and overall contribution to society.

The underutilized area on its own is not part of any future spatial development projects. Therefore child-friendly spatial development in the area could be both definite and temporary. Major future spatial development projects are set to take place just South-East of the chosen underutilized area. The projects and plans aim to develop the Old Sugar Factory area (Figure 4.1) and are set to attract new families and businesses. Considering the proximity of the underutilized area and the future spatial developments in De Suikerzijde, well-utilization of that area could increase the value and be of benefit to the future residents of De Suikerzijde, especially children. Incorporating the underutilized area with the future plans of De Suikerzijde into a definite development, creates opportunities for children to practice outdoor activities and socialize with friends on specifically designated areas.

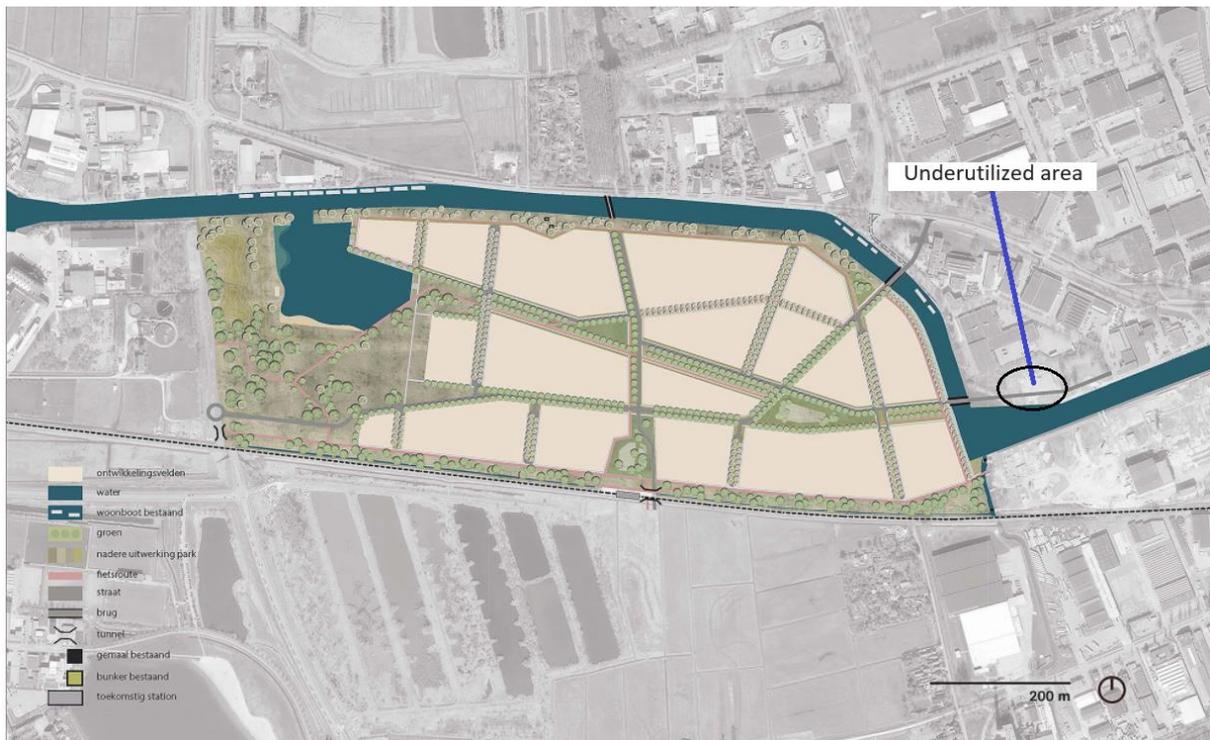


Figure 4.1: Future Project of De Suikerzijde (Gemeente Groningen, 2020)

4.2 Relevance of developing a child-friendly site on the underutilized area

The desk research on the neighbourhood demographics showed that families with young children live on a large scale in the surrounding area. A total of 180 children aged from 0-15 and 530 children aged from 15-25 are found to live in proximity of the underutilized area, making the underutilized area an ideal spot to investigate and introduce spatial interventions that aim to improve and promote the wellbeing of children.

The need to develop the area into a child-friendly site was supported by additional data retrieved from the Questionnaire and the Online desk research. The desk research pointed out that the researched neighbourhood lacks playground availability (Figure 4.2). Inexistence of designated childfriendly areas lowers the opportunities for children to practice outdoor activities and socialize with friends in safe environments. This issue was also confirmed via the Questionnaire data retrieve. 77% of the children living in the surrounding area expressed that their neighbourhood does not offer any designated areas for them to practice their preferred activities. The decrease of opportunities to practice outdoor activities was also interpreted by the children's insights. The data discovered (Figure 4.3) that a large part of the children does not meet the recommended days performing outdoor activities in a week. None to two days of outdoor activity participation per week is not recommended by health experts for children of that age (Ansari & Pettit & Gershoff, 2016). Not attaining physical outdoor activities, increase the risk for the children to develop obesity and mental disorders, such as depression and stress. Ideally, children of this age should participate in outdoor activities a minimum of three times per week (Ansari & Pettit & Gershoff, 2016).

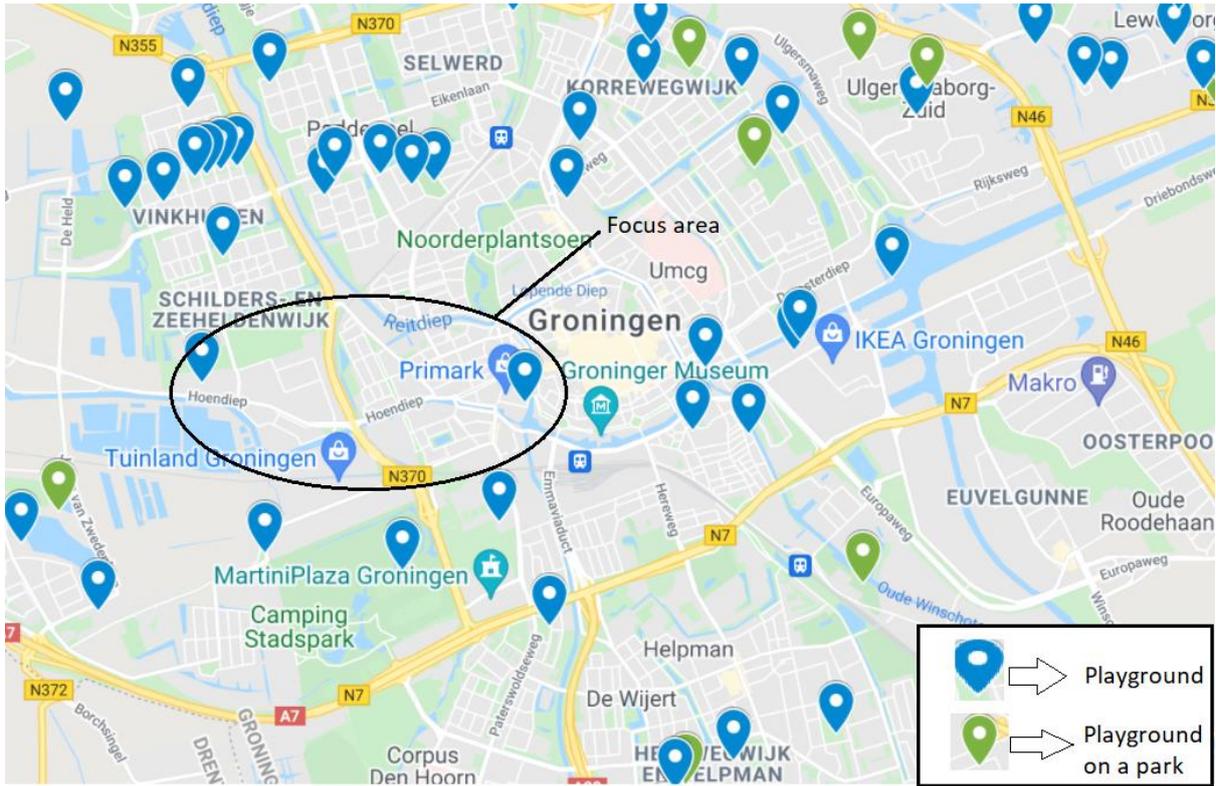


Figure 4.2: Active Playgrounds map of Groningen

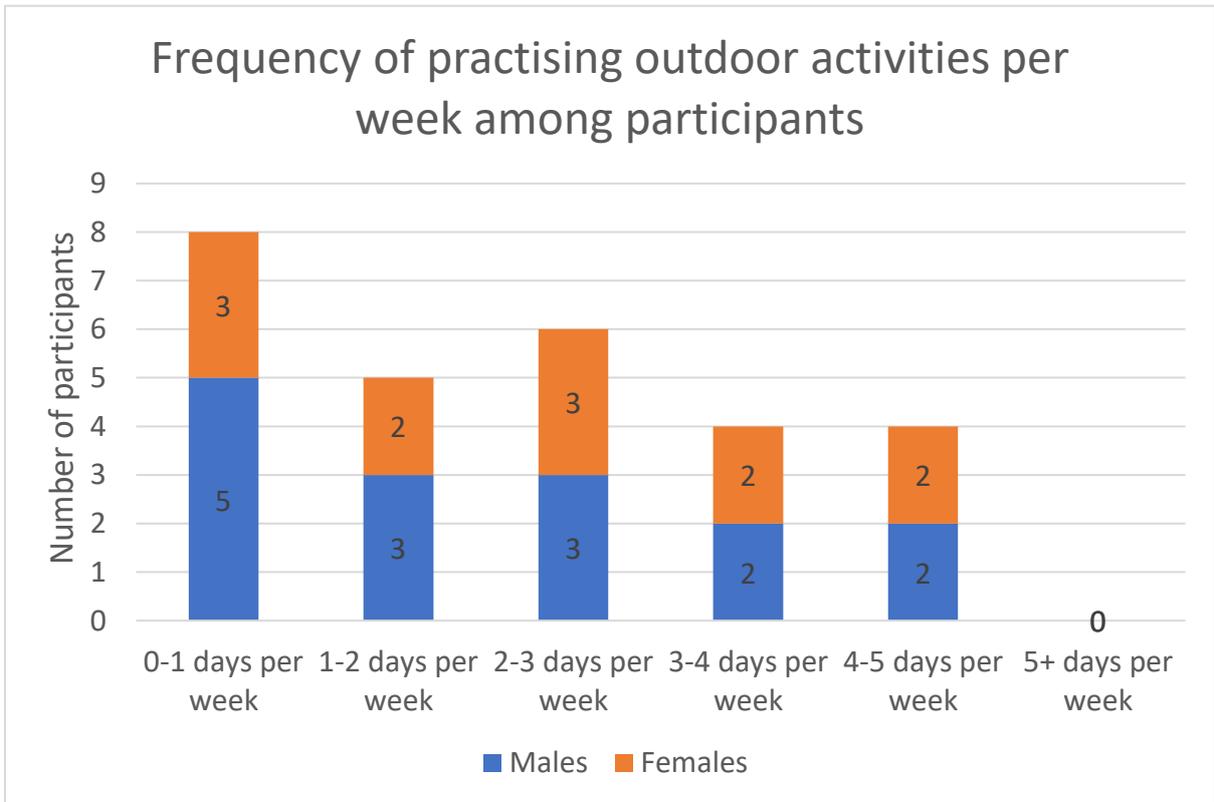


Figure 4.3: Questionnaire data

By developing the underutilized area into a childfriendly site several benefits could be derived in the near future. The children will have increased opportunities to practice outdoor

collective activities and socialize with friends in a safe designated area. That way their physical and mental wellbeing levels will be affected positively. Finally, utilizing the currently underutilized area will create value and elevate the quality of the neighbourhood in every societal aspect.

4.3 Case study, children’s preferences on child-friendly spatial features

Child-friendly spatial features can influence the quality and value of the developed area. It is often the case that rushed and top-down plans, especially when targeting children, fail to satisfy the needs and expectations. Therefore, taking into consideration local children’s preferences and perceptions on child-friendly spatial features improves the overall quality of the plan.

Preferences on specific spatial features towards the development of a child friendly area in Energieweg were acquired by children living in the surrounding area. Preferences were mostly influenced by personal likings, age, gender, and neighbourhood characteristics. The data acquired from the Questionnaire aims towards the involvement of local children in the planning process of the underutilized area. The research assures children the right to express their views and likings freely, in all matters that directly affect them.

Gender appears to be a detrimental factor regarding the children’s preferences on outdoor activities and spatial features. The most preferred outdoor activities among children can be seen in Figure 4.3. A direct relationship was observed between the preferred outdoor activity and whether a specific area to perform that activity is already provided in the neighbourhood. Children that chose activities that require specific and designated areas mentioned that their neighbourhood does not provide them with these areas. On the other hand, the current urban build environment provides undesigned areas to children that practice outdoor activities such as playing catch and biking. Undesigned areas such as urban squares and bike lanes are used for multiple usages and children are often found using these spaces for socializing and performing outdoor activities.

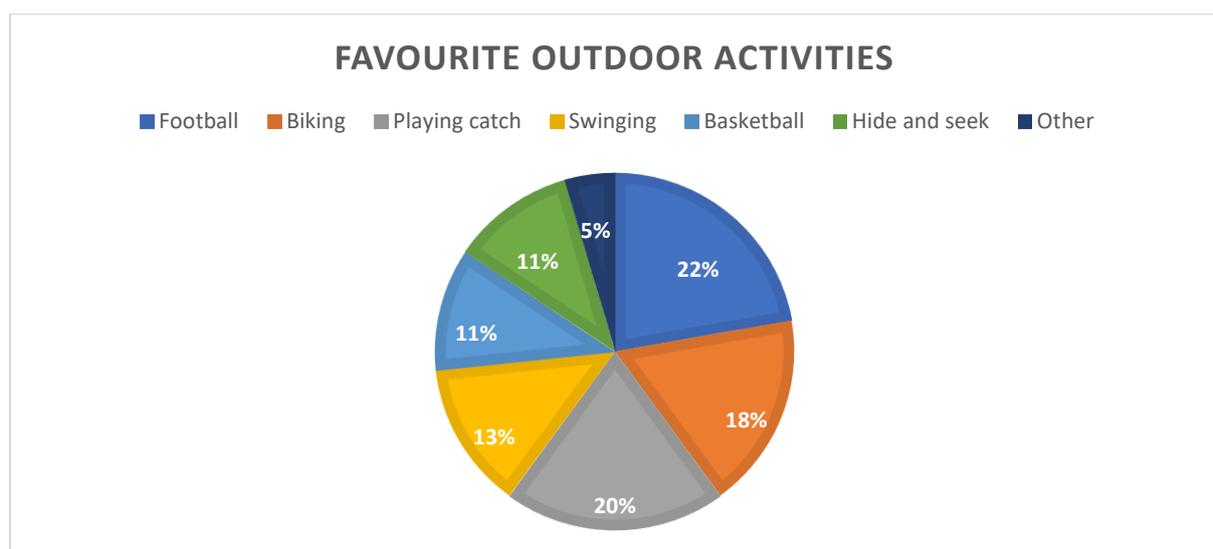


Figure 4.3: Questionnaire data

Spatial development in the Energieweg underutilized area should target both the socializing and physical activity factor of the children. Children of that age tend to spend most of their free time socializing with friends and practicing outdoor activities (Nordbakke, 2018). This theory is confirmed by the Questionnaire data, which explores that children aged from 9 years old to 12 years old value socializing and physical activity at the same degree. Therefore, a childfriendly site should incorporate spatial features that stimulate both of these two variables. Spatial socializing features that could be implemented in childfriendly areas according to literature and children's insights are sitting spots such as benches, shade spots and green scenery. When asked about their perceptions on how an ideal socializing spot would look like, these creative answers were distinct:

“A place where I can play safely with my friends and a lot of benches where we can sit when we are tired”.

Participant, 11 years old

“A spot where I can meet new and old friends, sit on the grass, play hide and seek with them and learn different team sports”.

Participant, 9 years old

“A place full of trees where me and my friends can go after finishing school and play card games in the shade created by the trees”.

Participant, 12 years old

Compelling insights were gathered regarding specific spatial features aiming promotion of physical activity. The spatial features proposed by children were directly linked with their most preferred outdoor activities. Spatial features such as football goals, playground equipment, basketball hoops, biking and walking paths were suggested on a large scale by children. Introduction of spatial features that are currently missing from the urban build environment and preferred by children living in the surrounding area, will stimulate the children behaviour. By developing designated areas, children are more likely to participate in outdoor activities and increase their physical wellbeing levels. It is anticipated that the children could increase the number of days participating in outdoor activities and meet the standards set by experts that lead to an overall healthier lifestyle. 85% of the children stated that they would make use of a new childfriendly area more frequently. The reasons behind their statement were various but these were some the most creative and relevant:

“I want to practice football more often. My dream is to become a football player, an area like that would help my skills while also having fun.”

Participant, 10 years old

“After school finishes I go directly to my house where I get really bored. If such an area builds in our neighbourhood I would go with my friends and play different sports”

Participant, 12 years old

Children's preferences and perceptions on spatial development were diverse, thus a clear preference pattern was sensitive to assess. Age and gender within the focus group were key variables that influenced the children's answers in the Questionnaire. Children's judgement on preferences is also influenced by the neighbourhood characteristics, for example if a football field was available in Energieweg, the spatial feature preference of including football goals in the childfriendly area would not be that popular. Different urban build environments create different needs, which can influence the preferences and perceptions on spatial development.

Chapter 5. Conclusions

5.1 Conclusion

The main research question of this study was: How could underutilized areas in Groningen be developed in order to support the wellbeing of the children based on children's perceptions and preferences, in a temporary or permanent way? This question is derived in response to the potential well utilization of underutilized areas holds in a social scale. Children's perceptions and preferences upon spatial development in these underutilized area gave the thesis a qualitative bottom-up approach regarding future spatial development. Involving children into spatial projects could be of great benefit to the overall quality of the final result. Neighbourhood characteristics and opportunities are not always taken into consideration from outsider actors and often the top-down spatial projects are set to fail in the near future.

This research concluded that childfriendly spatial planning development in the Energieweg area is much in demand. Both online desk research and qualitative data showed that children living in that neighbourhood have limited options regarding designated sites to practice outdoor activities and socialize with friends. Limited childfriendly spatial development has led to decreased levels of outdoor activity participation. The vast majority of the children do not meet the recommended daily amount of outdoor activity participation and socializing with friends. This puts the local children on a risk of having lower levels of mental and physical wellbeing compared to children that practice outdoor activities and socialize with friends more frequently. This research contributes to this societal issue by presenting a proposal that benefits both the underutilized area, the children's wellbeing, and the quality of the neighbourhood. Part of the research also contributes to the localization process of underutilized areas, data which can be used for future researches and projects.

Children's perceptions and preferences produced relevant qualitative data for this research. The data concluded that children spatial feature preferences are mainly based on two variables. These two variables are: the neighbourhood urban build environment characteristics and their favourite outdoor activity. For example, as the current neighbourhood does not offer any designated areas for children to play football and at the same time the most preferred outdoor activity among the children was football, the majority of the children suggested that the future childfriendly area should include football goals. A result that could be used in a wider and more generalized context is that children aged from 9 to 12 years old value socializing and practicing outdoor activities at the same degree. Therefore, childfriendly spatial development should aim in satisfying both of these variables. In a surrounding area where the opportunities to practice outdoor activities and socialize with friends are low in number, childfriendly sites developed with a bottom-up approach by considering children's preferences and insights is set to become a future attraction point for children.

Generalizing the results of this research, especially the children's preferences and insights, is not feasible. Different neighbourhoods, cities and countries offer different neighbourhood characteristics and social needs which lead to different preferences and insights. Since the qualitative part of this research was mainly focused on a neighbourhood of Groningen, the spatial features preferences and perceptions only relate to that exact neighbourhood.

Future research could widen the scope of the current research. It would be interesting to measure children's wellbeing, focusing on physical and mental health, before and after a child-friendly project implementation occurs. This way the degree of change can be explored

and whether the suspicions are justified by data in an actual case study. As the current research concluded that spatial plans that include local preferences and perceptions are set to become a successful attraction point, it would be interesting for future researches to explore on whether that is true, by measuring participation numbers throughout the years and comparing them to developed childfriendly sites that occurred without considering local preferences and perceptions.

5.2 Limitations

Limitations of this study were mostly noticed in the quality of the data, especially the Questionnaire. Question such as: "How often do you participate in outdoor activities?", could be directly influenced by the COVID-19 measurements and situation. It could be the case that the children do not participate in outdoor activities as much as before the COVID-19 outbreak.

Secondly, a specific part of the Questionnaire was risking wishful thinking bias. To the question: "Would you spend more of your free time in these types of areas?" was then added an additional "why?" so that the researcher could decrease the wishful thinking bias and analyse the argumentation. Regarding the PDOK dataset maps, results may have been influenced because of how recently the data has been updated.

Finally, the Questionnaire was constructed in a way that limits the creativity of the children and restricts their answers. These measurements were taken so that the analysis would be simpler and less complex to analyse. While limiting open-end questions and creating a guide towards the answers of the participants, there could be a small influence towards the result. The number of the participants in the Questionnaire is also relatively low and can not be representative. A larger number of participants could result in more significant and representative results.

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Appendices

Appendix 1. Observation Checklist

Observation checklist to verify suspicion on underutilized areas in Groningen

Location:

Date:

Name: Eriko Cekrezi

Criteria	Existent	Non existent	Not determined	Specifications
Buildings				
Green scenery				
Spatial development				
Sitting spaces				
Purposeful spatial interventions				
Organized activities				

Appendix 2. Questionnaire in both English and Dutch

Dutch Version

Leeftijd: ____ (vul in)

Geslacht: ____ (vul in)

Herken je de omgeving in deze afbeelding?

- a) Ja
- b) Nee

• Woon je hier vlakbij?

- a) Ja
- b) Nee

• Hoe vaak neem je op het moment deel aan activiteiten buitenshuis?

- a) 0-1 dagen per week
- b) 1-2 dagen per week
- c) 2-3 dagen per week
- d) 3-4 dagen per week
- e) 4-5 dagen per week
- f) Meer dan 5 dagen per week

• Wat zijn je favoriete activiteiten buitenshuis? (Noem maximaal 3)

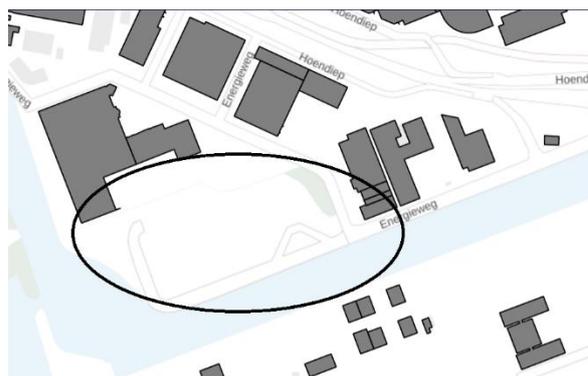
_____ (vul in)

• Zijn er in jouw buurt speciale plekken om buitenactiviteiten te doen?

- a) Ya
- b) Ne

• Zou je liever een plek hebben waar je met je vrienden kunt afspreken, buitenactiviteiten kunt doen of allele?

- a) Met vrienden afspreken



- b) Buitenactiviteiten doen
- c) Bide

- Leg in een paar woorden uit hoe jouw ideale plek om met vrienden af te spreken eruit zou zien.

- Als de lege plek in de afbeelding zou worden ingericht zodat je er buitenactiviteiten zou kunnen te doen, welke veranderingen zou jij dan willen zien? (Kies maximaal 3)

- Speeltoestellen (schommels, glijbanen, , ringen, enz.)
- Voetbalgoals
- Basketball baskets
- Bankjes
- Begroeiing (gras, bomen, bosjes, etc.)
- Fiets- en wandelpaden
- Skateboard plek
- Fontein
- Trampoline

Anders: _____ (vul in)

- Op een schaal van 1 tot 5, hoe hard is er een nieuwe plek waar je kunt afspreken met je vrienden of buitenactiviteiten kunt doen nodig in jouw buurt?

Niet nodig

Hard nodig

1

2

3

4

5

- Zou je meer vrije tijd doorbrengen op deze plekken? Zo ja, waarom?
 - a) Ja
 - b) Nee

Reden (vul in):

English Version:

Introduction:

My name is Eriko Cekrezi and I am a third-year student at the University of Groningen , studying Spatial Planning and Design. When I used to be a child of your age, my favourite activity to do outdoors with my friends was skateboarding. My neighbourhood did not have a skateboarding facility so I could not practise skating on a safe environment. Overtime I lost interest in skateboarding , which is unfortunate. By filling out this Questionnaire you will help in the process of creating areas to playgrounds and meeting points where you and your friends can socialize and practise outdoor activities.

The Questionnaire will take 5 minutes to fill. This Questionnaire should Only be filled by children aged 9-12 years old. Your answers will be used confidentially and Only for the aim of my research.

Age: ____ (fill)

Gender: _____ (fill)

Do you recognize the area that is included in the picture?

a) Yes

b) No

- Do you live close-by this area?

a) Yes

b) No

- How often do you currently participate in outdoor activities?

a) 0-1 days per week

b) 1-2 days per week

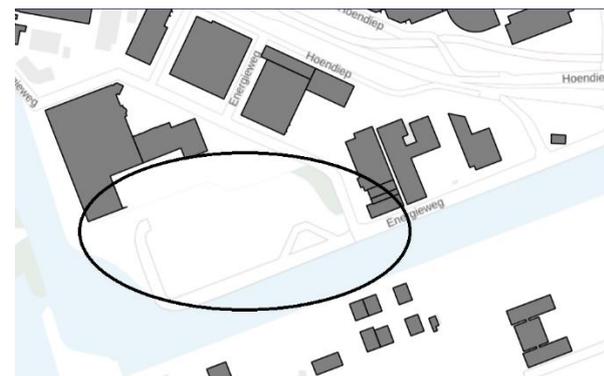
c) 2-3 days per week

d) 3-4 days per week

e) 4-5 days per week

f) 5+ days per week

- What are your favourite outdoor activities? (Mention only 3)



(fill)

- Does your neighbourhood provide specific areas for you to practise outdoor activities?

a) Yes

b) No

- Do you prefer an area where you can meet with friends, practise outdoor activities or both?

a) Meet with friends

b) Practise outdoor activities

c) Both

- Explain in a few words, what your ideal “meeting with friends’ area” would look like.

-
-
- If the empty area showed in the pictures, was to be developed in an area where you could practise outdoor activities, what developments would you like to be included? (Select a maximum of 3)

Playground equipment (swings, slides, monkey bars, still rings etc.)

Football goals

Basketball equipment

Sitting benches

Green scenery (grass/ trees)

Bike/Walking paths

Skateboard facility

Water fountain

Trampoline

Other: _____ (fill)

- In your opinion on a scale from 1 to 5, choose how much is a new area where you can meet with friends and practise outdoor activities needed in your neighbourhood?

Not needed

Much needed

1

2

3

4

5

- Would you spend more of your free time in these types of areas? If yes, for what reason?

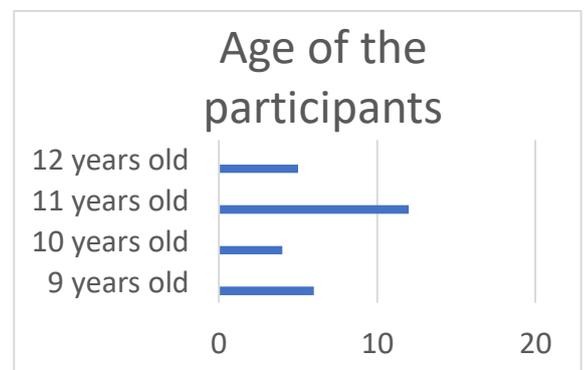
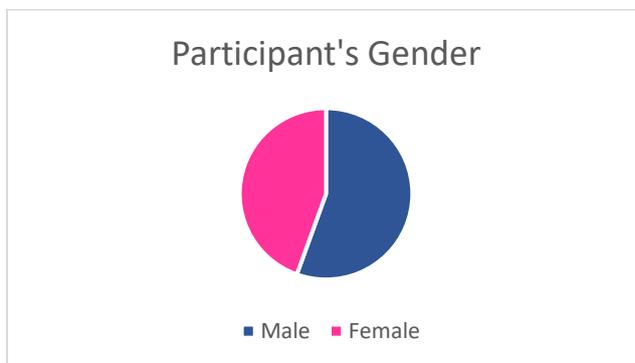
a) Yes

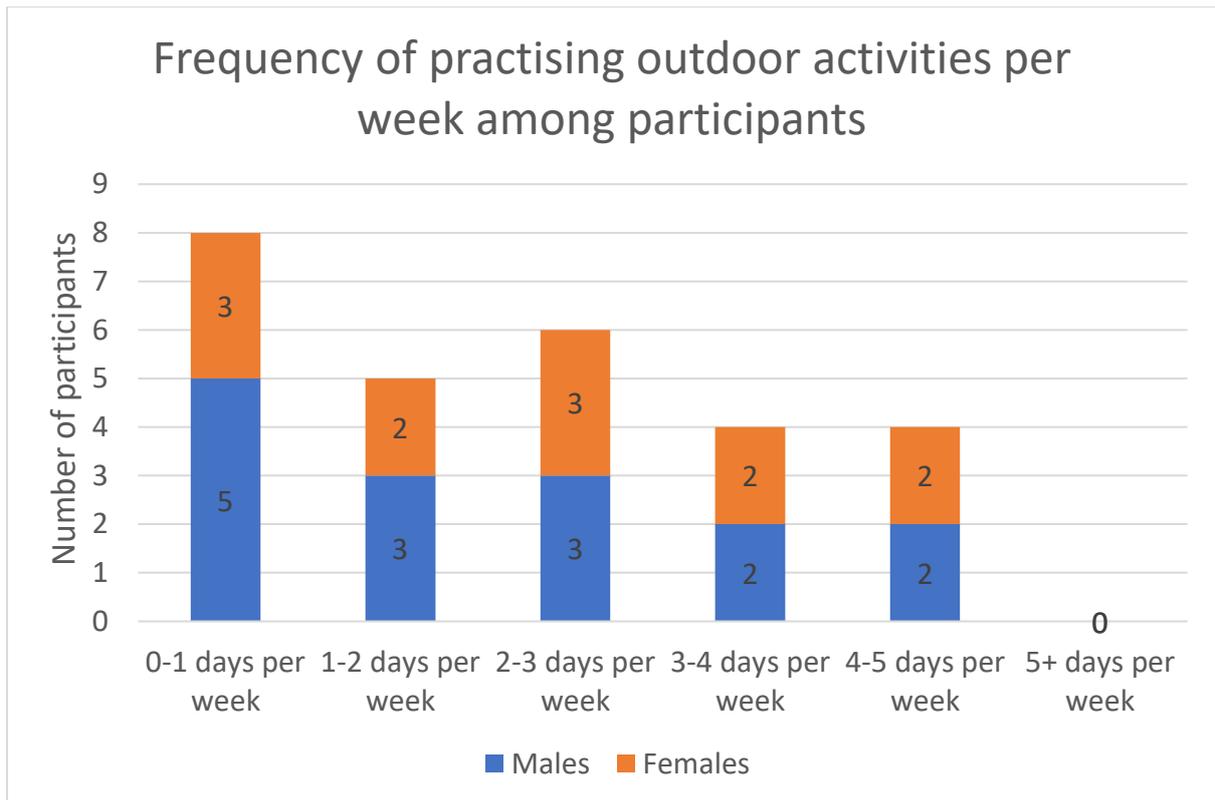
b) No

Reasons:

Appendix 3. Questionnaire results

Key Questions





Favourite outdoor activities:

Football was mentioned by 10 children.

Biking was mentioned by 8 children.

Play catch was mentioned by 9 children.

Swinging was mentioned by 6 children.

Basketball was mentioned by 5 children.

Hide and seek was mentioned by 5 children.

Other on smaller degree.

Does your neighbourhood provide specific areas for you to practise outdoor activities?

No: 21 children

Yes: 6 children

Do you prefer an area where you can meet with friends, practise outdoor activities or both?

Meet with friends: 4 children.

Practise outdoor activities: 6 children

Both: 17 children

If the empty area showed in the pictures, was to be developed in an area where you could practise outdoor activities, what developments would you like to be included? (Select a maximum of 3)

Football goals: 10 children

Playground equipment: 8 children

Basketball equipment 7 children

Bike/walking paths: 6 children

The other ones on lower scale

In your opinion on a scale from 1 to 5, choose how much is a new area where you can meet with friends and practise outdoor activities needed in your neighbourhood?

Average of the answers: 4.3

Would you spend more of your free time in these types of areas?

Yes: 23 children

No: 4 children