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How can Landscape Architects Contribute in the Planning Process to Create School Yards Based on Children's Needs and Aspirations?

-A Case Study to Test a Process to Bridge the Knowledge Gap Between Research and Practice

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HOW CAN LANDSCAPE ARCHITECTS CONTRIBUTE IN THE PLANNING PROCESS TO CREATE SCHOOL YARDS BASED ON CHILDREN'S NEEDS AND ASPIRATIONS?

- A case study to test a process to bridge the knowledge gap between research and practice

Title: How can landscape architects contribute in the planning process to create school yards based on children's needs and aspirations? – A case study to test a process to bridge the knowledge gap between research and practice.

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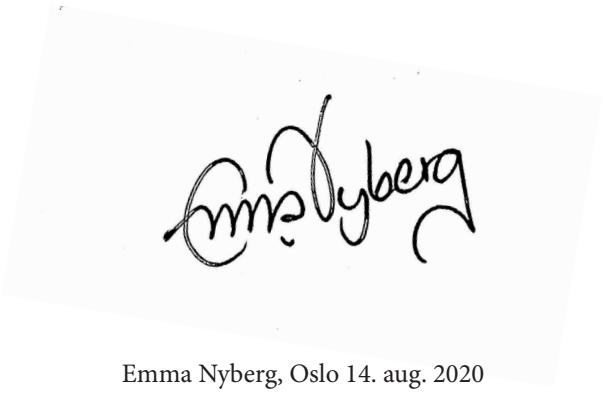
PREFACE

This assignment marks the end of the master program in landscape architecture at the Faculty of Landscape and Society, at the Norwegian University of Life Sciences.

The choice of topic is the result of numerous visits to playgrounds and school yards (used as playgrounds) with my own children, where I have noted the present state of play environments for children- either timeworn and seemingly neglected or a plastic moon landscape in bright colours. My background is in nursing and health care, and public health is something I consider important. I took a course on children's outdoor environments at the Swedish University of Agriculture, SLU, as part of this master education, and my interest grew stronger. I wanted to know more, and maybe even be able to do more about children's outdoor environments, to promote health and well-being. I believe it is vital, both on an individual level as well as for society, that we safeguard and ensure good places for children to play. I chose to focus the scope of this master thesis on school yards, because it is an environment our children spend a lot of time in. If we can improve quality in the areas where many children go, many children can benefit.

I would like to thank everyone that has helped me forward in this assignment. Thank you Anne-Karine Halvorssen Thorén, my supervisor- I have learned so much from you. Thank you also to Katinka Horgen Evensen, my second supervisor for support in the starting phase. Thank you to Jesper Hoel at Undervisningsbygg Oslo KF (UBF), for letting me in on the process of rehabilitation of school yards in Oslo municipality- and for always engaging in interesting conversations. Thank you to the project group at Ammerud Elementary School for letting me be part of your process and work- you are so inspiring!



Emma Nyberg, Oslo 14. aug. 2020

ABSTRACT

Through research, we know that high quality outdoor environments have positive health effects in children. Research also show the importance of including children in planning the spaces they are to use. We have laws, regulations and guidelines that all intend to ensure good quality in children's outdoor environments, as well as children's right to be heard and respected. Yet, evaluations show that the knowledge we have is not applied in practice by policymakers, planners and designers. This can be described as a knowledge gap between research and practice in the field of children's environments and may have several causes. One of them is that policymakers, planners and designers find it challenging to access the knowledge and also that the knowledge is not written in a way that can be translated into design in the landscape.

This master thesis focuses on school yards and explores a process to utilize research-based knowledge on quality in school yards and translate it into design, by using a quality assessment tool, a user-group participation study as well as the knowledge of the landscape architect. The aim is to try to bridge the gap. The methods used are based on the concept of affordances, focusing on what the children can and want to do in their school yard. The process proved to be successful in the case tested in this assignment, and the conclusion from this project is that using the methods demonstrated in this master thesis can help guide the design and be a way for landscape architects to contribute in the planning process and so promoting better quality in school yards. For this to happen, landscape architects need to have a clear definition of their role in the planning process.

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1. INTRODUCTION

1.2 Background

The theme for this master thesis is the knowledge gap between research and practice within the field of quality in children's environments, and how this may be bridged.

Research show that high quality outdoor environments are found to have positive health effects in children, such as a leaner body, longer night sleep and overall better well-being (Söderström, Boldemann, Mårtensson, Raustorp, & Blennow, 2012). To play is in itself key to children's development, grounded in exploration and discoverings of the complex context of the world. The experiences of play also prepare us for future challenges (Grahn, Mårtensson, Lindblad, Nilsson, & Ekman, 1997). The outdoor environment of a school, hereafter referred to as the school yard, are first and foremost concidered children's own place and their place for play in all different forms (Thorén, Nordbø, Nordh, & Ottesen, 2019), but it is also an important arena for physical activity. Nearly half of a 10-year old's total amount of daily physical activity takes place in the school yard during school recess (Ridgers, Stratton, Fairclough, & Twisk, 2007). As of today, children's physical activity levels are declining and is one of the reasons for a growing global crisis of childhood overweight and obesity (WHO, 2016), potentially leading to serious health complications (Ebbeling, Pawlak, & Ludwig, 2002) and may also negatively affect educational accomplishments and quality of life (WHO, 2016).

There is a growing field of knowledge about children's environments, through studies from different parts of the world and the research-field is constantly gaining new knowledge (Bishop, 2017). There is also extensive knowledge on the importance of taking children's views into consideration when planning the spaces they are to use (Bishop, 2017; Lindholm, 1995; Loebach & Gilliland, 2010). Yet, this knowledge is not applied in practice by policymakers, planners and designers. Therefore the knowledge we have, will not benefit children as it might (Bishop, 2017).

In Norway, there are several political directives to ensure children's interests and needs regarding the places they are to use. The Convention of the Rights of the Child, Central government planning guidelines[1], The Plan and building Act, The Norwegian Constitution as well as national policies regulating planning on a municipal level- all intend to safeguard children's rights to good and safe environments and their right to be heard. There are undoubtably good intensions, but evaluations show that we are currently planning children's places on adults terms (Thorén & Nordbø, 2020).

1 Rikspolitiske retningslinjer, RPR-BU

The issue is complex and several barriers are identified as reasons to why planners and designers do not use the existing knowledge. One reason may be that children have low priority in large projects. It has also been found that it is difficult for policymakers, planners, and designers to access the information. Another reason might be that the knowledge is not written in a way that can be "translated" into policy or design (Bishop, 2017).

It is known that adults and children experience the environment differently (Kylin & Lieberg, 2001; Lindholm, 1995), which is why we must consult children when planning their environments. Further, landscape architects have been found to experience difficulties in the role as a communicator with user groups. They also experience difficulties to use the knowledge they get from users, as this is in conflict with other roles landscape architects feel they have in the planning process (Paget, 2008).

To bridge the knowledge gap that seem to compromise children's ability to have high quality outdoor environments, we can explore practices that address and lower the barriers, as a way forward to implement knowledge from research into the design of children's environments.

To investigate this in further detail, school yards was chosen as a focus for the assignment. Through school yards, we can reach close to all children in the country, potentially improving health and well-being for many children (Thorén et al., 2019).

1.3 Aim and research questions

This master thesis aims to explore a process to bridge the gap between research and practice in the field of quality in children's environments. Further, it aims at demonstrating a process and a role for landscape architects that may be used to transfer knowledge from research to practice in the planning process.

To approach the aim, the following main research question will be studied:

How can landscape architects contribute in the planning process to create school yards based on children's needs and aspirations?

To answer the main research question, the following three sub-questions will be investigated:

1. How can quality be assessed in a school yard?

    - Which characteristics are important in children's outdoor spaces to promote play, learning and healthy physical and mental development?
    - How can knowledge about children's needs be transformed into an assessment tool?

2. How can children's opinions be recognized and respected when planning a school yard?

3. How can a school yard be designed based on scientific knowledge on children's needs, and knowledge from participation with children?

1.4 Definition of school yard

The term school yard in this master thesis refers to the outdoor environment related to a school. The definition of the term used here is derived from Thorén et al. (2019) who defines the school outdoor environments as follows:

The available and accessible area possible to use by children

- The gross area minus buildings, parking lots and other traffic related areas, bike parking, litter bins or the like.
- The area intended for play, stay and recreation.

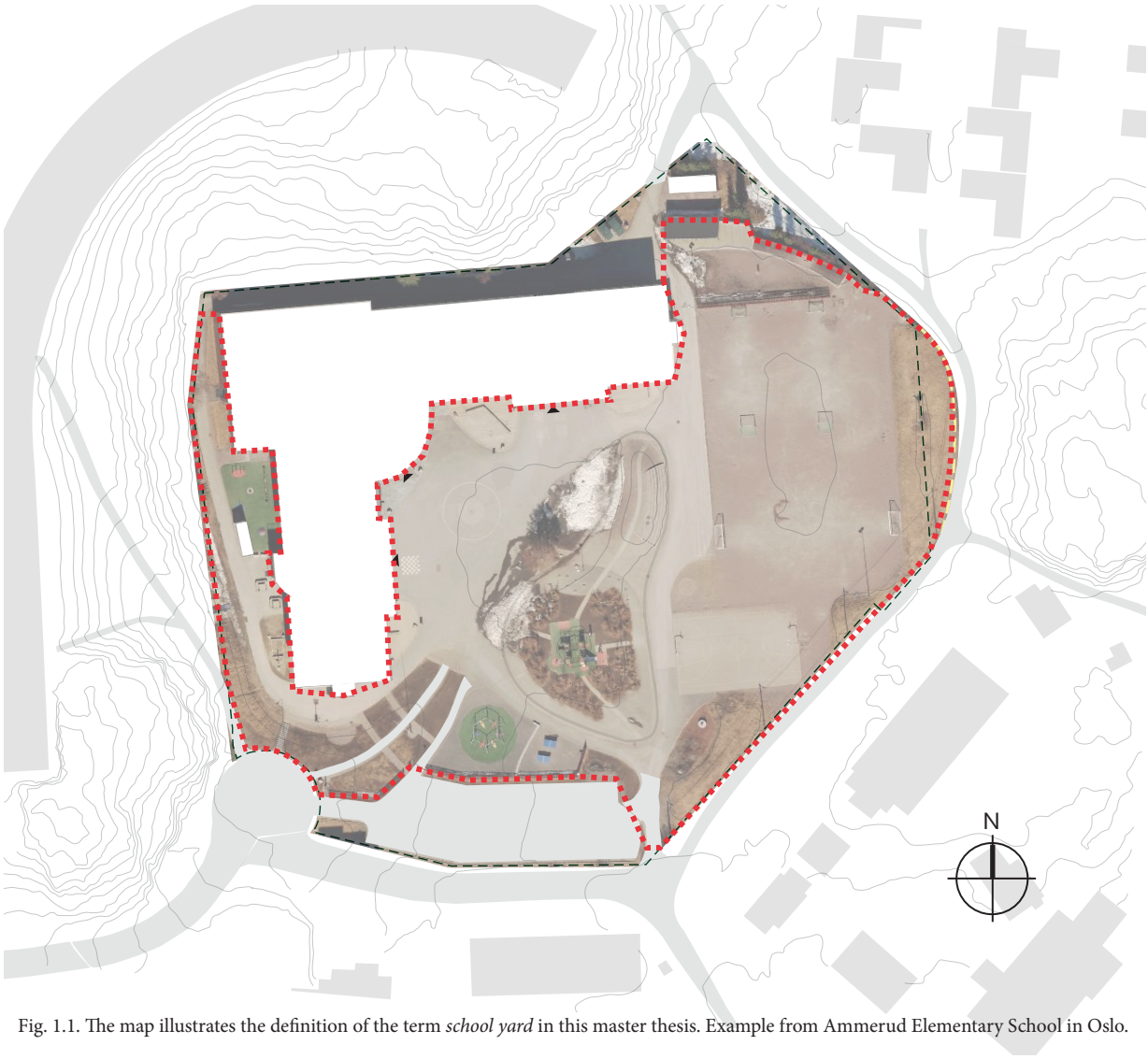


Fig. 1.1. The map illustrates the definition of the term *school yard* in this master thesis. Example from Ammerud Elementary School in Oslo.

1.5 The structure of the master thesis

The master thesis is divided into seven chapters. In chapter 1, background information to the problem as it is recognized here, is presented along with the aim and research questions. Chapter 2 give the theoretical framework for the master thesis, with a presentation on quality in children's environments defined by the concept of affordances, and a presentation to the view on children's participation used here. In chapter 3, the methodological approaches that have been used to answer the research questions, and why these methods were chosen, are described. The choice of theoretical foundation and methodological approaches represents my point of view, of how the problem I want to explore, may be addressed.

Chapter 4 introduces the case study, in which the analyses I have described as my methods, will be tested. In chapter 5 the suitability of the methods, limitations for the analyses and meaning of the findings are discussed. Chapter 6 is the conclusion, with thoughts on the professional contribution of this work. Finally, chapter 7 presents my personal reflections over my process throughout the project.

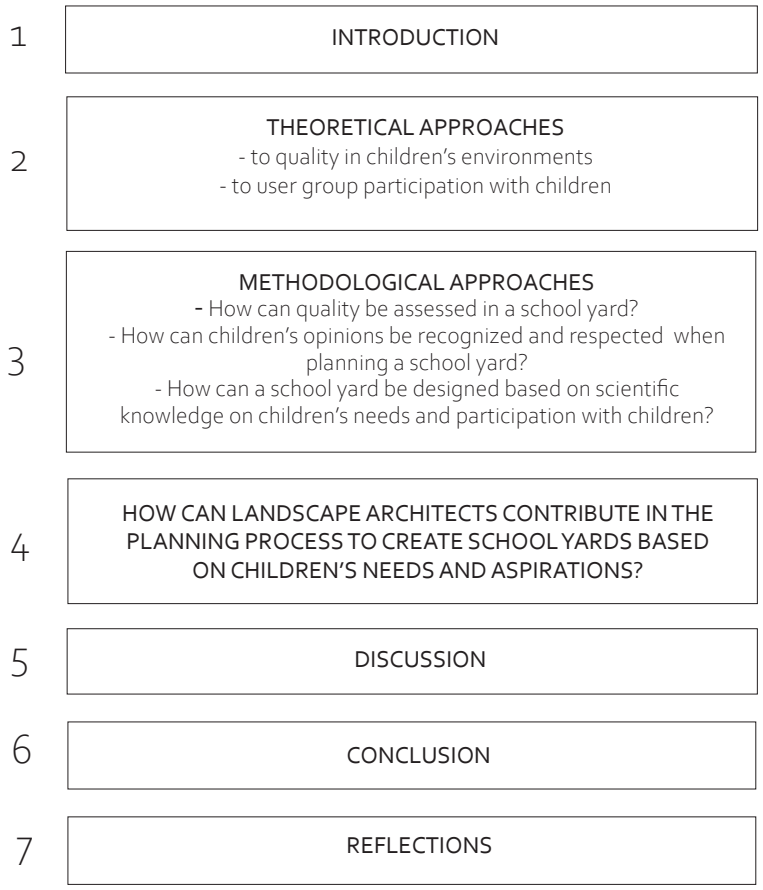


Fig. 1.2

2. THEORETICAL APPROACHES TO QUALITY IN CHILDRENS´S ENVIRONMENTS AND TO USER-GROUP PARTICIPATION WITH CHILDREN

This chapter presents the theoretical point of departure chosen, to further investigate the research questions. First, the most influential theoretical ideas concerning how children perceive and use their surroundings are presented. The second part of this chapter introduces the theoretical background to children's participation. These approaches have been chosen because they highlight the importance of using children's perspectives when we design children's places.

2.1 Theoretical approaches to quality in children's environments

The affordances of the environment are what it offers the animal (Gibson, 1986, p. 127)

The concept of affordance can be useful for planners and designers concerned with planning with users in mind (Heft, 1988) and has previously proved to be useful for studies on how children use their outdoor environment (Fjørtoft, 2001; Kyttä, 2003). The concept of affordances is an attempt of explaining the environment with a starting point in function-based as an alternative to form-based descriptions (Lerstrup & Konijnendijk van der Bosch, 2017). Describing environments based on form will not give us information about possible functions, and hence the meaning for its users (Heft, 1988).

The Theory of Affordances take on how we perceive our environment and how this depend on the individual. The theory uses expressions like stand-on-able for a rigid surface or sink-into-able for water. That is what the object or matter affords or offer, the animal. At the same time as an elephant sinks into to the river, the surface of the water is possible to stand on for the water-beetle. The same matter is perceived differently by different individuals. The water affords support to stand on, walk on and run on for the water-beetle but it affords to bath in and swim in for the elephant. Different objects or matter afford different things and can be used and manipulated in different ways. Gibson used the known word afford, which means provide or offer, and constructed a new word, a noun-*affordance*. The environment provides affordances, and what is perceived as an affordance is determined by the individual animal; it is relative to the animal (Gibson, 1986).

All affordances are dependent on the relation between environment and person (Heft, 1988). Inspired by Barker's theory of behaviour settings, Heft added this idea and concludes that environment, person, and behaviour is necessary in a functional description of an environment. Hence the definition of affordances can be "the meaningful action possibilities of the environment" (p.49), stressing the three necessary factors for an affordance: the setting, the person, and the action. (Lerstrup & Konijnendijk van der Bosch, 2017).

For a child, the first thing they notice about an object, is what it affords them. Form, colour, texture, and other attributes of the object is secondary to what gives meaning. If an object has the certain characteristics to provide an

affordance, the individual can see this and understand how to use the object or matter- and hence it has meaning, to this individual (Gibson, 1986). According to Lerstrup and Konijnendijk van der Bosch (2017), both Gibson and Heft point out that the perception of affordances for an individual will change over time. As the individual grow, both in size and competence, some affordances will fade and other will emerge. An individual's interest may also change; consequently, the perception of affordances will change.

In summary, affordances revolve around what an individual can do in a certain place- that is, what action possibilities are offered there. As mentioned earlier, adults view the environment differently than children. To find out what affordances children perceive at a location, what meaningful activities they do there, we need to ask them. In the next section, the theoretical background to user group participation with children be presented.

2.2 Theoretical approaches to user-group participation with children

The act of incorporating children in planning processes requires knowledge about different types of participation (Hart, 1992) as well as an understanding of successful ways of communicating with children and to use methods that are suitable for their competence (Einarsdottir, 2007). Participation can be defined in different ways. The most renowned theory is Hart's children's ladder of participation (Hart, 1992), which is a modified version of Arnstein's ladder of participation for adults (Arnstein, 1969).

The idea has been very popular and widely used, but Hart himself expresses some criticism towards common misunderstandings with the model and he disapproves to it being used as a strict method. He stresses that the aim of the children's ladder of participation was to highlight a problem that was long neglected- that of adults frivolous attitude towards children's opinions and methods for participation. Hart simply wanted to inspire a dialogue to encourage adults to re-think the way they handled children's participation. Instead of viewing children's level of participation as a ladder, he suggests a scaffold instead which enables more flexibility and will let everyone decide their own routes for advancement towards the top (Hart, 2008).

Although the children's ladder of participation is, by some, considered outdated (Hart, 2008), I have chosen to use the image of the ladder to address and visualize the problem, and later discuss where it is believed that the children's participation study in this assignment, is placed on the ladder. I ask the reader to view the idea of a ladder in a metaphorical way. The method for children's participation used here, and the outcome in relation to the level of involvement according to the ladder, will be discussed later in this assignment (see chapter 6: Discussion).

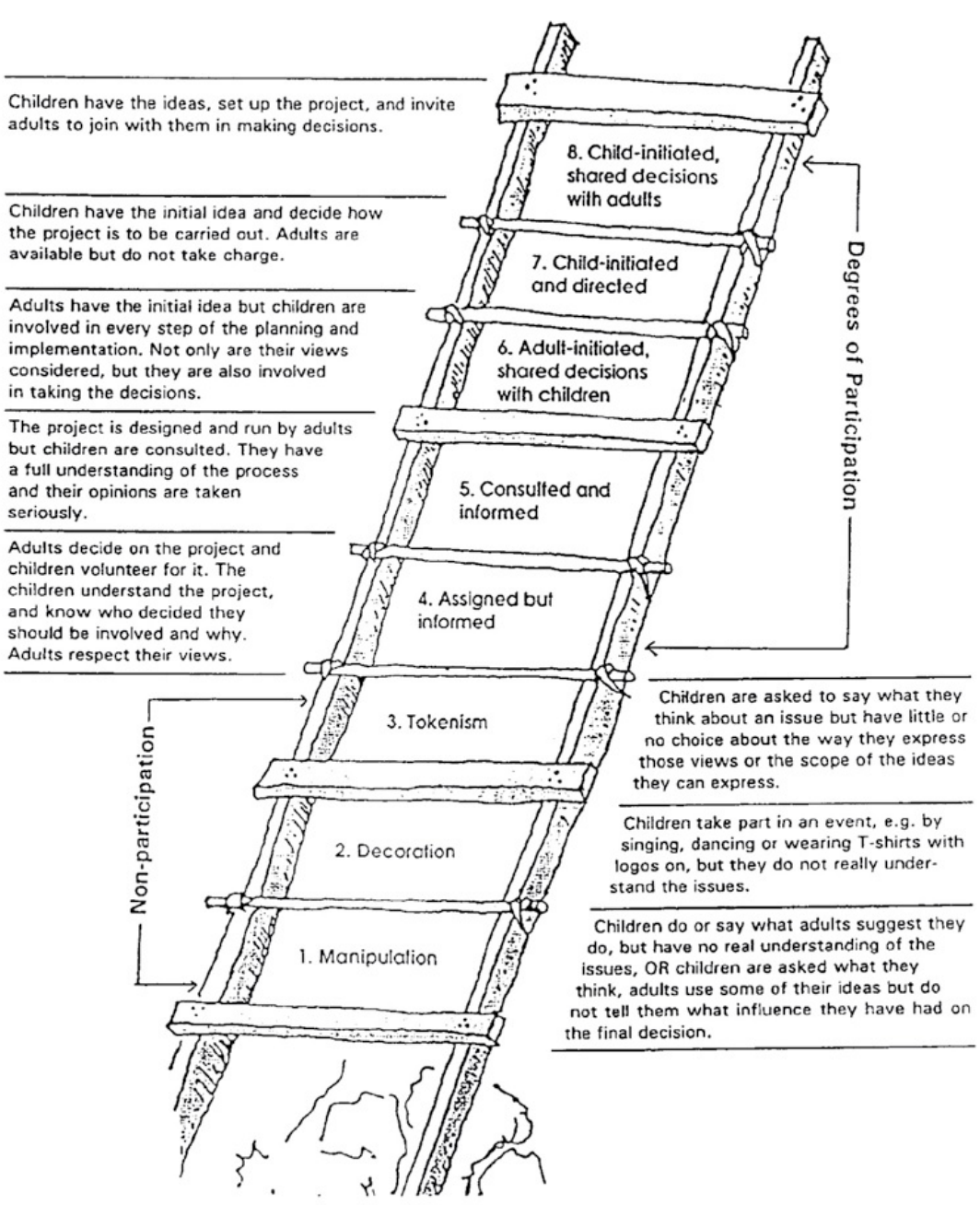


Fig.2.1 Hart's ladder of participation

3. METHODOLOGICAL APPROACHES

In this chapter, the methods used to answer the three research sub-questions will be described, as well as the reason for why they were chosen. The concept of affordances provides an explanation to how places can be meaningful for a person- by enabling them to do the things that they like and that motivates them. All three research questions that are to be investigated, are based on the concept of affordances.

3.1 How can quality be assessed in a school yard?

3.1.1 General practices for quality assessment

For any task, the chosen method needs to measure the things you intend to find information about. To assess quality in a play site may be described as making an inventory, where it will be possible to map out the existing qualities.

Tools for planning, management, and development of outdoor environments for children come in a variety of versions, often depending on what is to be measured and how the data are to be used. Tools can be in the form of checklists or inventory lists with set goals for the minimum are per child in the yard, or how many square meters of the yard that must be protected by the sun. Quality assessment tools can also have a more qualitative approach in analysing the environment. Analysis tools typically assess the area by giving scores for different parameters. These tools often derive from environmental psychology and several research-based analysis tools have been developed (Jungmark & Åkerblom, 2017). The Outdoor Play Environment Categories (OPEC) by Mårtensson (2013) is such a tool. The tool Seven C's (Herrington & Lesmeister, 2006) and Lekvärdesfaktor/Play Value Factors (Malmö stad, 2011) are also analysis tools developed to assess quality in children's play environment. The tools mentioned here, all assess quality in preschool settings .

Research provide knowledge based on the best available evidence that we have today. One way of implementing the evidence-based knowledge in planning may be to use tools based on evidence-based knowledge (Jansson & Andersson, 2018).

3.1.2 Which characteristics are important in a school yard to promote play, learning and healthy physical and mental development?

I have used two main sources to describe characteristics found to be important in children's play areas, regarding quality. The two sources represent quality in playgrounds and quality in school yards, respectively. To use them are motivated by the fact that school yards are used as playgrounds in afternoons and weekends, making it relevant to include these qualities also for school yards. This section will start with a short introduction of the sourc-

es. They will be presented in detail later in this sub-chapter.

Characteristics known to be important to create quality in children's environments are found in:

- the tool by Jansson and Andersson (2018) which presents 21 criteria for quality in playgrounds. The tool is based on a literature review, other research, and other methods to assess quality in play environments.

- the report by Thorén et al. (2019) that recommend 13 criteria to establish good quality in schools and pre-schools. The list is based on a literature review, experiences from site inspections in five Norwegian municipalities as well as experiences from other countries. The report also recommends a minimum size of school yards and a minimum area per child[2].

Caroline Andersson wrote a bachelor thesis addressing sustainability in municipal playgrounds, which included a tool that links ecological, social, and economic sustainability aspects for playground development, with child friendliness (Andersson, 2017). In 2018 the think tank Movium published a slightly revised version of the tool, now signed Märit Jansson and Caroline Andersson (Jansson & Andersson, 2018). The revised tool is called *Analysis tool for evaluation and development of playground quality*[3]. This master thesis will use the version of the tool presented in Movium.

As previously mentioned, Jansson and Andersson (2018) uses knowledge from a literature review by Jansson (2010) and additional research and other tools to highlight 21 characteristics to be important for quality in playgrounds. The characteristics presented in the list, are here viewed as a summary of the knowledge from research on quality for playgrounds:

- **Varied topography**- Hills, slopes, bedrock, or other terrain differences. Vegetation and topography constitute more than half of the total area.
- **Playable vegetation**- Trees, bushes, climbing trees, shrubs, playfully trimmed paths in high grass, etc.
- **Loose material**- Blocks or bricks, sand, sticks, branches, pinecones, leaves or needles, rocks, berries, etc. are accessible.
- **Play equipment and their integration into the landscape**- Vegetation make up a canopy that covers half of the sky over the area where children play. Play equipment are integrated in the landscape and placed under vegetation.
- **Availability**- Areas with sand and water, slides, swings, climbing, biking etc use the same size area as sport fields. There are several options for play, socializing and to relax. There are adaptations for many different variations of abilities and individuals: wheelchair users, large swings with rooms for friends, visual contrasts, etc.
- **Meeting place**- The playground has lighting and a variety of seating options, tables, a fire pit, etc. It has an including design with access to vegetation, unprogrammed design with a spatial structure, and unprogrammed tools and equipment.
- **Time and change**- The playground change with different things to do as seasons and weather change: go

2 Applies to new schools
3 Translated by the author of this report.

sledding, jump in water puddles, play with autumn leaves, eat berries etc. The four elements, earth, fire, air, and water are present and the more of them, the better. Cultivate, a fire pit, wind shelter, weather-vane, water play, etc.

- **Eco system services**- Eco system services are represented, like bird houses, insect hotels, meadows, dead timber, a butterfly flowerbed, open storm water management, cultivation, etc.
- **Natural material**- Natural, toxic free materials are used and parts of the playground are built on site or built with reused material. There is a variation in permeable materials. Hard surfaces are limited, and plastic carpets and artificial turf are at a minimum.
- **Spaciousness**- The playground provide space to move in many different directions and it is possible to do action filled play like run, climb, swing, balance, slide, tumble, roll down a slope etc.
- **Spatiality**- a varied spatiality with possibilities within the play, to find different places to be at. Varied spatiality is obtained through different natural materials like bedrock, logs, rocks, bushes, trees, etc. or through different zones, like for instance: social-spacious- wild
- **Variation**- A variation in play options and possibilities are provided in and between different play areas. There are challenges for different ages: unique play equipment built on-site, an adventure playground, sites with unique qualities are preserved, digitalisation etc.
- **Access and proximity**- Access to play environments in the nearby area. Less than 300 meters to the nearest green area, play spot or playground. Distance depends on the traffic situation and how much this hinders children's mobility.
- **Location and surrounding**- There is no through traffic and it is possible to reach the playground by walking paths or bike routes. It is close to a green area, natural elements with several play opportunities, or residential areas, pre-schools, and schools as well as recreation, culture, service, etc.
- **Children's possibilities for their own places**- Children have access to nature or other play-friendly places close by, that they can change and manipulate. Children have the possibility to create their own places, through playable vegetation and loose material. They can build bush-dens, dens with loose material, tree top dens etc.
- **The child perspective**- The management work towards giving children free mobility, access to their own places, green environment, access to public space, meeting places and areas with limited traffic.
- **Children's perspective**- The management involves children in the development of the playground to visualize their needs, experiences, and opinions.
- **Participation**- The management makes the future users of the playground involved in the development of the playground. Children, youth, and adults are invited and together they figure out a plan for how the place are to be used and how it may be designed accordingly.
- **Teamwork**- The management have a holistic approach, are engaged, and collaborate with other actors, like operational management, the users of the playground and others.
- **Responsibilities**- The management take responsibility for a more child-friendly city through the child perspective, children's perspective and through making children involved in the development of the playground.
- **Routines**- The management have formulated strategies and routines for a sustainable playground development, and they use these regularly. There is a playground program, a child-consequence analysis, standards for location, child maps in GIS, for universal design etc.

In their report, Thorén et al. (2019) presents a list of 13 characteristics to be important for health and well-being among children in the school yard and ensure good quality in their outdoor environments. The recommendations are based on; a literature review; the outcomes from case-studies in school yards and pre-school yards in five different Norwegian municipalities; and experiences and references from other countries. The list is viewed as a summary of the knowledge from research about characteristics that will promote quality in school yards:

- Choose a building plot with adequate sun conditions and that is not exposed to noise and pollution
- Ensure safe traffic conditions in a radius of 200 meters from the school and ensure safe access to the premises. Reduce the number of parking lots where access by bike, by foot, or by public transportation is good.
- Ensure that there is no traffic in the school yard.
- Reduce the footprint of buildings as much as possible and place them in a way that frees space, to instead be used by children
- Ensure universal design
- Establish or preserve elements of nature/terrain/topography, existing or man-made. These are especially important as social meeting places, for play, varied use, physical activity, and motoric development
- Ensure that the school outdoor environment provide both sun and shade. Vegetation is especially important to create shade and protect from harmful UV radiation
- Provide a varied content with functions designed for everyone, different age groups and levels of competencies
- Ensure calm zones where it is possible for children to withdraw
- Ensure/provide social meeting places
- Provide a design ensuring zones and spatial design with well-integrated functions. Avoid large monofunctional areas like soccer fields. It is better to plan for middle sized rooms/zones in good spatial sequences. The provided functions should not be too specified or provide just one function.
- Provide areas for storage/storage rooms for equipment.
- Ensure areas for local storm water management.

Thorén et al. (2019) also give recommendations on the area needed per child in a school yard and recommendations for the total size of the school yard, in relation to the number of children attending the school:

- The general recommendations are 30 square meters per child in an elementary school yard
- For schools < 99 children the recommendation is at least 3000 square meters in a continuous area.
- For schools with 100- 499 children the recommendation is 30 square meters per child.
- For schools with more than 500 children the recommendation is to add an extra 15 square meters per child

The recommendations for size, presented above are intended for new school yards (Thorén et al., 2019). Although these are recommendations for new schools and school yards, they will be used in the tool also for already existing school yards. Thorén et al. (2019) found that less space may cause a high activity pressure, possibly wearing down or damage physical features and elements of nature already present present in the school yard. The critical limit is said to be 20 square meters per child. Size of the school yard is therefore important since it may indirectly effect quality.

The two sources used as a base for knowledge in this assignment, addressed quality characteristics at the same scale and to a similar degree of detail. They differ in their scope, where the report by Thorén et al. (2019) are focusing mainly on physical attributes of the site, while Jansson and Andersson (2018) has a wider range, including policies that control the planning process, on their list of qualities. Thorén et al. (2019) separate policies and assess these independently.

In addition to the knowledge described above, a new characteristic has been added. Although it does not specifically address quality in the school yard, it is included because it is believed to be essential for enabling children access to playgrounds. The background to why this is concidered a problem, as explained by Refshauge, Stigsdotter, and Cosco (2012) is that younger children today, cannot visit a playground without supervision and are therefore dependent on their parent's motivation for going there. This is described as the greatest barrier to park use.

The new category refers to children's possibilities to visit the school yard as a playground, and how this relates to their parents willingness to visit this playground. Gibson (1979) originally presented "other persons" and animals as an affordance, and the topic has later been discussed by Lerstrup and Konijnendijk van der Bosch (2017), who acknowledges other persons as an important feature. It has been found that much visited playgrounds, were popular because visitors could expect to meet other people there. Further, the thought of a playground as a meeting place, increased visits even more (Jansson, 2010).

Although more research on these relations are needed, the key aspects found to be important for parents when choosing to bring their child to a playground are good possibilities to socialize, short distance and easy access, good and appealing variation of play equipment and a high degree of nature. These aspects apply a little different for mothers and fathers but affect the length of the stay, frequency of stay and more (Refshauge et al., 2012). Jansson (2010) found that both children and adults may be considered playground users.

If parents are a barrier for children's visits to a playground, it does not matter how good quality the play environments hold- children still cannot benefit from them. Based on this the added new category is called enabling factors, which will assess adult affordances in the playground. If parents or guardians can find meaning in visiting the playground, research show that more children will be able to go there too.

3.1.3 How can knowledge from research about children's needs be transformed into an assessment tool?

The aim of this section of the master thesis is to generate a tool, or method, that can assess quality in school yards and how the functions meet the needs of children both during school recess and as a community playground in after school hours. It was also important that the tool was practical, not too time-consuming and that the result would be clear and easy to present to other actors involved in the planning process, to share and discuss.

Jansson and Andersson (2018) say that a reason for the absence of quality in children's environments might be the lack of tools that can support the evidence-based knowledge to be implemented and put into practice. The authors have, as previously mentioned, presented such a tool called *Analysis tool for evaluation and development of playground quality.*

In the next section I will describe how I used this tool as a base and further developed it, to also fit the context of a school yard. The tool will be used as a method to identify which qualities are present, and where. It will also reveal which qualities are lacking, and what areas that are lacking quality. The altered tool will be tested in a case in chapter 4.2.

Analysis tool for evaluation and development of playground quality is, as mentioned before, based on nine criteria for quality in playgrounds presented by Jansson (2010), on other scientific studies and on other assessment tools, primarily OPEC and Lekvärdesfaktor (Jansson & Andersson, 2018).

The tool is chosen for several reasons. First, it measures quality at a relevant level of detail for what is believed to be appropriate to measure for this kind of evaluation. The tool also distinguishes between different kinds of "green" environments- a tree, a lawn and a bush afford fundamental different things which needs to be recognised.

The tool *Analysis tool for evaluation and development of playground quality* is the backbone and frame for building the strategy. The original tool is altered to fit the aim of the assessment and the situation. The reason for this is that there, for this assignment, is a need to assess quality of school yards both as the outdoor environment used by children during school recess but also as a community playground, since that is the intention of the municipality of Oslo. I have therefore chosen to compliment the original tool, which is focusing on quality in playgrounds, with findings from research in the field of quality for school yards.

I started by thoroughly going through the two lists of characteristics previously presented, looking for overlapping themes. When a characteristic needed further understanding, some of the original sources were investigated where this was possible, to better understand the intention. All the characteristics from both sources, were written on paper notes together with key notes, and placed on a table. The notes were then sorted and rearranged into a new list, now covering all 21 plus 13 characteristics, in a new list of 27 characteristics.

The synthesis of characteristics found by Jansson and Andersson (2018) and by Thorén et al. (2019) and the addition of the category enabling factors (adult affordances), resulted in the following list, to cover qualities important in a school yard, that will also function as a playground after school is closed:

- Teamwork
- Strategies and accountability
- The child perspective
- Children's perspective
- Participation
- Access and proximity
- Location and surroundings
- Children's possibilities for, and ability to have, their own places
- Location of building on the premises
- Size of the school yard
- Area per child

- Spaciousness
- Zones
- Spatiality
- Variation
- Using place-unique features
- Availability
- Meeting place
- Storage
- Time and change
- Eco system services
- Natural material
- Varied topography and continuing vegetation
- Playable vegetation
- Loose material
- Sun and shade
- Adult affordances

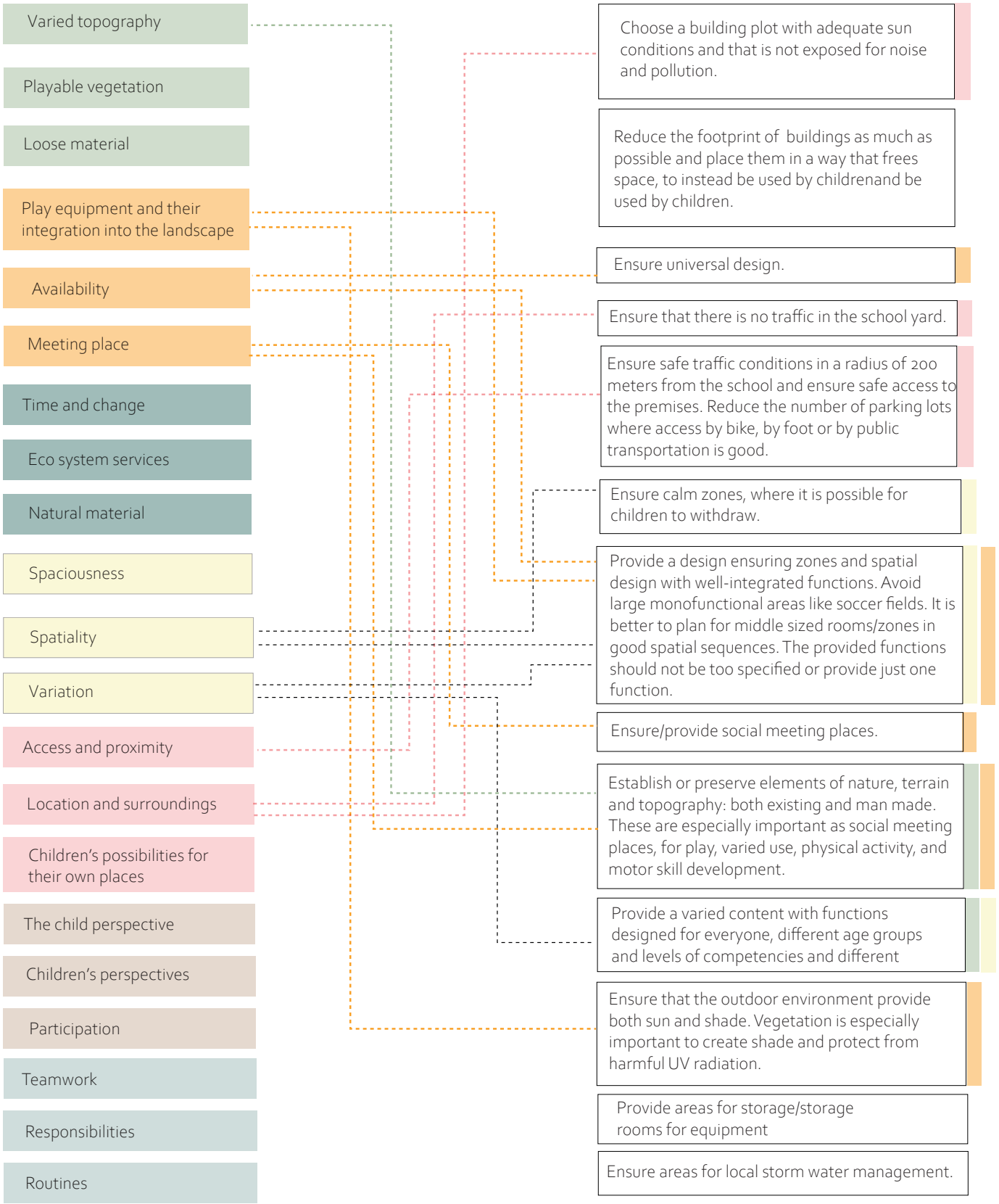


Fig.3.1 Synthesis of quality criteria

The original tool *Analysis tool for evaluation and development of playground quality* has been designed to work as an instrument to measure and evaluate a play area, but the authors also highlights the use of the tools as a method in the planning process, in designing children's environments, building them and in managing them (Jansson & Andersson, 2018). This is a view and an approach forwarded in the altered version presented here.

Use of the tool:

1. Instrument to assess and evaluate existing school yards
2. Use in planning process: Plan, Design, Building school yards, Management- quality control in a time span
3. Discussions about quality in school yards

The following questions are to be answered when assessing quality in a school yard:

SCHOOL YARD QUALITY EVALUATION– criteria

POLICIES

Approach

Teamwork (0-1p): Do the administrative management have a holistic approach to functional use, maintenance and the future of the school yard? Do the management encourage and engage in teamwork with, and between other actors, such as operational management (gardener/janitor)? Do the administrative management collaborate with other users of the school yard?

Strategies and accountability (0-1p): Have the administrative management worked out strategies, routines or guidelines (for content and design, area norms, universal design, etc.) for a sustainable development of the school yard and use these regularly?

Child friendliness

The child perspective (0-1p): Do the management administrating the school yard work towards giving children in the area free mobility, acess to their own places, acess to green surroundings, acess to the public space and access to meeting places? Do the management work towards limiting traffic in the local community?

Children's perspectives (0-1p): Is the management involving children early in the process when developing and designing the school yard? Is the management working towards realising children's ideas and aspirations?

Participation (0-1p): Is the management including the future users of the school yard to discuss its function as a meeting place for the local community? Is the management involving children, youth and adults in how the school yard can be used in the local community? Is the management discussing the design for the needed functions with the future users of the school yard?

GEOGRAPHICAL CONTEXT

Place specific characteristics

Access and proximity (0-1p): Does the school yard offer safe traffic conditions in a radius of 200 meters? Is there access to other play areas nearby- 300 meters to a green area or playground? Is there a well-developed net way of pedestrian walkways and bike paths that promotes safe mobility for children, youth and adults in the neighbourhood? Is there sufficient public transportation and access to the school premises by pedestrian walkways or bike paths? Where access is good- has parking lots been reduced to free space for play?

Location and sourroundings (0-1p): Is the school yard located according to the following?
- Limited exposure to pollution or disturbing noise
- No passage or way through the school yard
- Located near a green area with natural elements offering a variety of play opportunities
- In proximity to where many people live, to pre-schools or recreation, culture, service etc.

Location of building on the premises (0-1p): Is the "footprint" of the school buildings reduced as much as possible? Is the building placed so that as much as possible of the premises can be used for play?

Childrens possibilities for, and ability to have, their own places (0-1p): Do children have access to nature or other play friendly places close by where they can go themselves and that they can affect and manipulate? Are chilren given the opportunity to create their own places, through playable vegetation and loose materials: dens or play-houses in the bushes, dens or play-houses from loose material, tree-top play-houses, etc.?

SIZE

Enough space

Size of the school yard (0-1p): Do the size of the school yard corresponds to the number of children attending the school according to the following guidelines:
- For schools < 99 children, the smallest combined play area is minimum 3000 square meters.
- For schools with 100-499 children, each child has 30 square meters.
- For schools with more than 500 children, an extra 15 square meters/child applies to the area norm.

Area per child (0-1p): Do the school yard offer 30 square meters to play at, per child attending the school? (The critical limit for school yards is 20 square meter per child, which is shown in grey in the figure).

The figure can be used to scribble the square meter each child has to play at

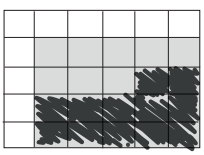


Fig.3.2

SCHOOL YARD QUALITY EVALUATION– critera

PLAY AREA ATTRIBUTES

Characteristics

Spaciousness (0-1p): Does the play area offer space for motion in several directions and offer possibility for play with action : run, jump, climb, swing, balance, go sliding, tumble, roll down a hill, etc.? Are there several middle-sized areas for different use, rather than large monofunctional flat areas (e.g. football field)?

Zones (0-1p): Is the play area divided into different zones, for example: social – spacious - wild? Is one of the types of zones a calm zone, with possibility to withdraw from the masses?

Spatiality (0-1p): Does the play area have a diversed spatial design with options to choose between different sites for the same play activity? Are "rooms" placed consciously in relation to one another and inter-connected? Is there a selection of natural material: exposed bedrock, logs, rocks, bushes, trees, etc. that can create or add to spatiality?

Variation (0-1p): Is there a variation in play opportunities? Is there variation at the same site and also between different sites in the school yard? Are there challenges for all ages? Are there location-built play equipment and tools available ? Is it possible to build and construct things?

Inclusion & sociability

Using place-unique features (0-1p): Do the school yard offer play equipment that are integrated in nature and into the landscape, such as slides that make use of the terrain and topography, or play equipment placed under vegetation? Do the vegetation in the school yard provide a natural coverage, where maximum 50% of the sky is visible where children usually play?

Availability (0-1p): Are the areas that offer sand- and water play, slides, swings, climbing or cycling at least the same size as areas offering ball games? Is the school yard designed for persons with different physical or mental abilities, such as areas customized for wheelchairs; swings to lay down in and visual contrast?

Meeting place (0-1p): Does the school yard provide lighting? Does the school yard offer a selection of seating places, tables or a fire pit? Does the school yard offer unprogrammed places and structures and tools whose functions are not pre-defined? Does the school yard offer access to unprogrammed vegetation?

Storage (0-1p): Does the school yard offer storage? Is it accessible for everyone? Does the storage offer toys and movable play equipment?

Possibilities to understand the environment & a larger context

Time and change (0-1p): Does the play area change and offer different things to do as seasons and weather change: sledding, jump in rain puddles, play with the fallen autumn leaves, eat berries and fruit, etc.? Are the four elements- earth, fire, air and water exemplified in the play area: to cultivate and grow plants, use a fire pit, use wind shelters, a weathervane, do water play, etc.?

Eco system services (0-1p): Are there eco system services represented within the play area: birdhouse or nesting-box, insect hotel, meadow, dead wood, butterfly flowerbed, open storm water management, cultivation, etc. ?

Natural material (0-1p): Is the play area consisting of natural, non-toxic materials? Is part of the play area built with recycled materials? Is part of it built on site to fit the location? Is there a variation of permeable ground materials? Are hard surfaces and rubber carpet or artificial grass, limited?

Site–specific features and possibility to affect the place

Sun and shade (0-1p): Do the play area offer places to play or sit, both in sun and shade to avoid UV rays? Is vegetation creating the shade?

Varied topography and continuing vegetation (0-1p): Does the play area offer varied topography including small hills, slopes, rock formations or other terrain height differences? Is the proportion of space with topography and continuing vegetation larger than 50% of the play area?

Playable vegetation (0-1p): Do the play area offer playable vegetation like trees to hide under or climb in, bushes to play with or playfully trimmed pathways in high grass, etc.?

Loose material (0-1p): Does the school yard provide loose materials like sand, sticks, branches, pinecones, leaves or needles, rocks, berries or blocks? Are they easily accessible (placed fully exposed in the school yard or in boxes)?

ENABLING FACTORS

Enabling & promoting visits

Adult affordances (0-1p): Does the school yard provide meaningful things to *do* for adults too? Are there appropriate seating options? Is it possible to sit by a table and bring food? Are there meeting places to socialize? Does it provide a variety of play equipment? Does it have a high degree of nature?

The *Analysis tool for evaluation and development of playground quality* (Jansson & Andersson, 2018) includes an evaluation chart. This is viewed as a strength for the tool, as it is believed to make the tool easier to use and more comprehensible. The altered tool presented in this study, also includes an evaluation chart, based on the original:

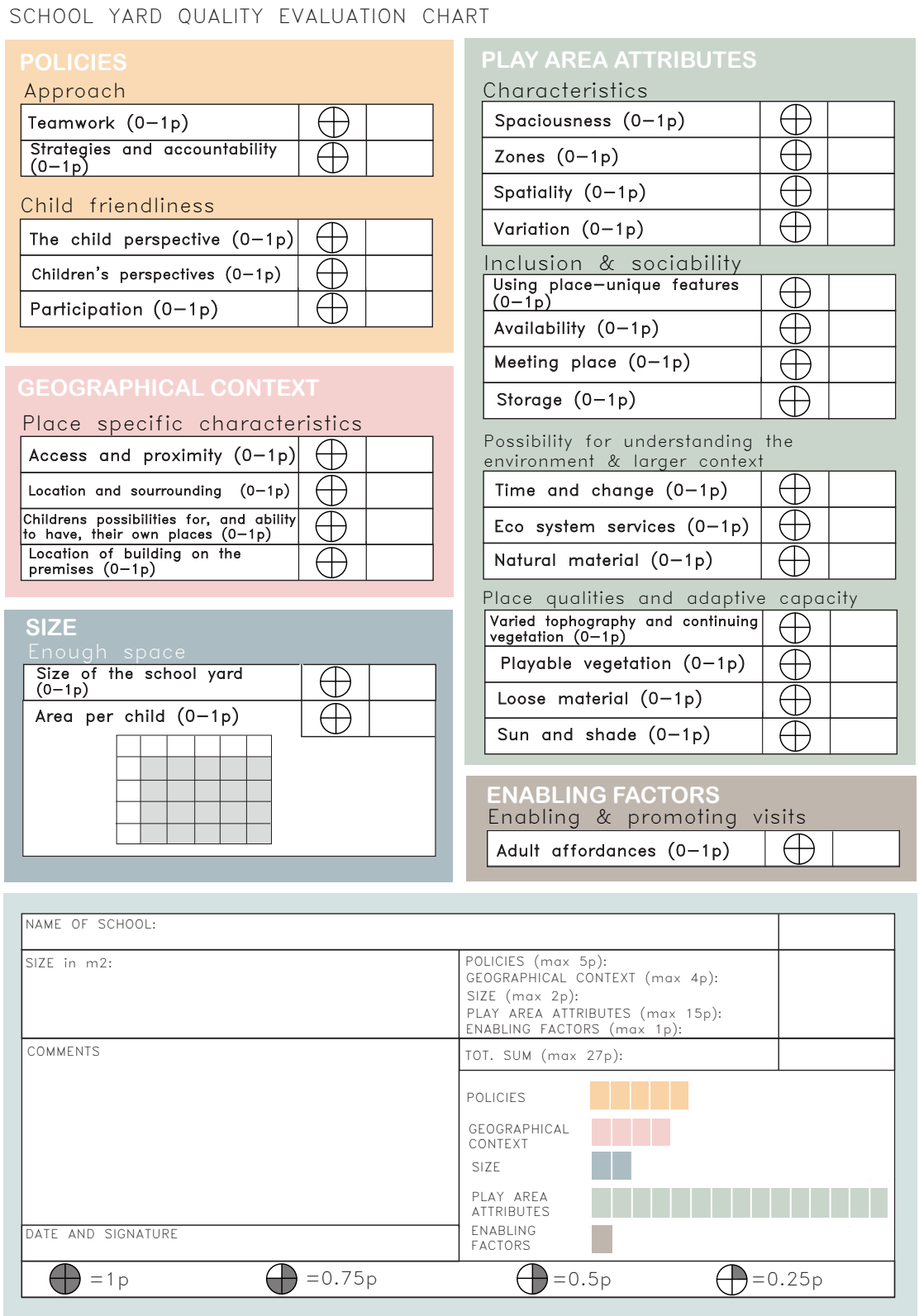


Fig.3.3

From previous experience using the original tool, a problem that occurs is that assessment might be done differently depending on the person conducting the assessment. In this thesis a set of guidelines are therefore proposed, to help when scoring the criteria in the evaluation chart. The guidelines will be tested in chapter 4.2, and possibly adjusted depending on how it works out.

There is a total of 27 criteria to assess using the new version of the tool. The criteria are phrased as questions, where the person conducting the evaluation chart is asked if a described criterion is present in the school yard. If the answer is "no" the circle for this criterion is to be left blank in the evaluation chart, meaning the score is zero points. If the answer is "yes" this is to be marked in the evaluation chart according to the following scoring system:

EVALUATION SCORING GUIDE:

0,25 p. –	The characteristic for this criterion is present, but only by one example in the school yard.
0,5 p. –	The characteristic for this criterion is represented by more than one example in the school yard.
0,75 p. –	The characteristic for this criterion is represented at more than a few locations in the school yard, and in different areas/zones and settings.
1,0 p. –	The characteristic for this criterion is represented in various ways and there is a clear and conscious plan for this quality/function in the school yard.

3.2 How can children's opinions be recognized and respected when planning a school yard?

3.2.1 General practices for user participation with children

There is a difference in planners view and children's view of a place and how they describe qualities of a place. The findings suggest that planners and children talk at different scales, which makes their different view of a place difficult to compare (Kylin & Lieberg, 2001). To be heard can contribute to well-being, a sense of belonging and to improved health through the experience of sovereignty. Children's participation is also promoting learning (NOU, 2015).

There are several different methods to use when conducting user group participation studies with children. Various kinds of surveys may be used, using drawings, interviews, photography, child-led walks, or combinations of methods.

3.2.2 The strategy for children's participation

The aim for this analysis was to map out and identify the perceived affordances and use of the school yard from a child's perspective. The planned strategy was to use a method called child-led walk, which can be described as an interactive group-interview. The fundamental principle of this method is that it invites children to show the places she or he likes, dislikes, visit often and so on. By visiting and presenting their places, they can describe in action what they do at a certain location. This will reveal the child's perceived affordances of a place, in relation to her or his own person.

Due to the sudden situation with the covid-19 virus in March 2020, the school whose children were to be interviewed using child-led walk, was closed. As the lock-down continued and the development of the situation was new and difficult to predict there was very little possibility to foresee plans. A decision was made, to investigate other options as a method for collecting data about what the children like to do and how they perceive their school yard. Since the children uses iPads for schoolwork, the first option was to use a digital software including maps where children could mark places in the school yard. Two products built for user participation in planning processes were investigated. The first one was Maptionnaire ("Maptionnaire," 2020) , which is a tool that uses open ended questions and the possibility to use my own maps. The product seemed suitable as a method for this study, but through communication with the company it became clear that even the student-price was too costly. For a master thesis with no funding this unfortunately was not an option. The Norwegian product Barnetråkk (Norsk design- og arkitektursenter, 2020) was then investigated. This tool is free, and the aim of the product is to make the process for user participation with children easy and efficient and ultimately make children's voices heard in the planning process. Unfortunately, the tool is "locked" and exclusive for persons working within the municipality. For a student writing a master thesis, it turned out to be impossible to be granted access.

After some further research into other digital software on the market that turned out to be dead ends, a decision was made to make a questionnaire, print it on paper and hand it out to the children. The questions were formulated identical or similar as to what had been planned for the child-led walk, and so focusing on what the children do. As mentioned earlier the intention was to investigate the affordances perceived by the children in the school yard. The questionnaire had four main questions and a map where children were asked to mark the places they referred to in their answers.

Studies show that children in primary school have the skills to recognise and identify features in their known familiar environment by looking at aerial photos or large-scale maps. Furthermore, it is shown that children more easily interpret an aerial photo than a drawn map because it show the real situation allowing for direct interpretation of the area without the use of a legend to de-code symbols which is the case of maps (Boardman, 1989; Svatonova & Rybansky, 2014). Research support that 11- years old prefers images, as in aerial photo instead of maps and consider working with images interesting (Svatonova & Rybansky, 2014).

The questionnaire, including both questions and map, were informally tested on a 10-year-old boy who does not know the school yard from before. He had visited the school yard once before he was handed the questionnaire. He could immediately recognize and identify the specific places and details about where he played, what he did and what he used. He also gave feed-back on the questions and how he interpreted them, which were to great help.

The questions in the questionnaires were in Norwegian. This is the English translation:

- Where is your favourite place in the school yard? What do you like to do there?
- What other places do you like? What do you do or play there? What places do you not like? Why?
- What do you like to do in wintertime? Mark where on the map. What do you like to do in summer? Show this on the map.
- What do you wish you could do in the school yard?

The children were asked to write their answers on the handed-out paper and focus on what they do. They were asked to use numbers to mark the different places on the map that they referred to in their written answers. The children were also asked to mark if they were a girl or a boy.

HVA LIKER DU Å GJØRE i SKOLEGÅRDEN?

Fortell meg hva du liker å gjøre i skolegården på Ammerud skole, hvor du liker å være og gjerne hvorfor det er bra akkurat der!

- Hvor er favorittstedet ditt på skolegården? Hvorfor er det favorittstedet ditt? Hva liker du å gjøre der?

- Hvilke andre steder liker du? Hva gjør eller leker du der? Hvorfor da? Hvilke steder liker du ikke? Hvorfor?

- Hva liker du å gjøre om vinteren? Vis hvor på kartet. Hva liker du å gjøre om sommeren? Vis på kartet.

- Hva ønsker du at du kunne gjøre i skolegården?

Bruk plassen under til å skrive på. Legg vekt på å forklare hva du gjør. Bruk tall og marker de ulike stedene på kartet og bruk samme tall foran beskrivelsene dine.

Fig.3.4

Jeg er jente ☐
Jeg er gutt ☐

TUSEN TAKK!

3.2.1.2 Ethics for user group participation

When doing research that involves children one must be aware of the differences between children and adults in the sense, we see the world. The way we perceive the environment, experience the environment and how we communicate our experiences is different, and as adults, we need to identify and understand these differences in order to fully comprehend the research material we get from research engaging children. It is also important that we consciously work towards finding ways to overpass the differences and expand our understanding of children's view (Cele, 2006).

The collection of source data, handling of data including storing data, and the interpretation of the result is the most vulnerable parts in this study considering ethical issues. Photos taken of the school ground to describe the play environment may include persons, but precautions have been taken so that no individual will be possible to identify.

The study is approved by the Norwegian Centre for Research Data (NDS)[4] and data collection has been done anonymously. There has been a discussion on whether this is right or if written consent should have been asked from participants and their guardians. Eventually it was agreed that the questions could be asked without participants disclosing their identity. In case a child would write their name by mistake, the name would immediately be removed from the survey and discharged. This was considered less of a risk and exposure than actively collecting names and signatures from approximately 100 children and their guardians. The filled-out questionnaires will be terminated after the project is finished. Further details will be presented in chapter 4.3.

3.3 Children's drawings

During the planning and work on the master thesis project, the case school made their own preparations for the rehabilitation of their school yard, planned to take place in 2021. In early spring of 2020, the school project group, in which I was invited to be part of, initiated a drawing contest for the children of the school. It was not possible to include this material in this master thesis, due to time limits and workload. Yet, I was part of the jury to elect winners in the competition and therefore invested some time in going through and understanding all the drawing from 1st through 7th grade, in addition to a few drawings from former student of the school- now attending 8th through 10th grade on a new school. The drawings are included as a method because working with them affected the process and the understanding of the process. To some degree it also influenced the design.

In total, 71 drawings were handed in for the competition. Some grades, especially the lower ones, were well represented and handed in many drawings, while some grades had fewer participants. The winner collected a free pass to a trampoline park. The drawings and my understanding of them and their content, (my written motivation for electing them) are presented in chapter 4.4.

4 Documentation in appendix 2

3.4 How can a school yard be designed based on scientific knowledge on children's needs, and knowledge from participation with children?

The case selection strategy was to find a school in need of rehabilitation. Through help from the Municipal Undertaking for Educational Buildings and Property [5] I got access to information about the schools that were on their list to be rehabilitated. I chose to narrow the options to school yards that were to be rehabilitated in 2021. This meant that the actual planning for the rehabilitation were starting in the spring of 2020 and I was invited to witness the process. Out of the two schools on the list, Ammerud Elementary School was chosen because it is considered a typical school yard with problems and challenges that are often present at many other schools in the Oslo region. In this way, the result might be valid for a larger number of schools.

I wanted to explore what a school yard may look like if it was designed based on knowledge. Through the two analyses previously described in chapter 3, the desired knowledge will be obtained. This knowledge, combined with the knowledge from the landscape architect, are the pillars of the design proposal presented in chapter 4.

The assessment tool will be used to identify the existing qualities in the school yard today, and where they are. It will also be possible to see which qualities are lacking. The tool can also reveal what areas that are lacking qualities altogether. When designing the new school yard, there will be a focus on adding the lacking qualities, in the areas that are "empty".

Through the user group participation study with children, the existing qualities, as in the percieved affordances, will be shown as well as where children find affordances. There will also be revealed what the children wish they could do in their school yard. The result will be used, to make sure to save the affordances found by children today, as well as including the affordances they wish for. A detailed description will follow in chapter 4.

5 Undervisningsbygg Oslo KF, UBF.

4. HOW CAN LANDSCAPE ARCHITECTS CONTRIBUTE IN THE PLANNING PROCESS TO CREATE SCHOOL YARDS BASED ON CHILDREN'S NEEDS AND ASPIRATIONS?

In this chapter the case will be presented in detail and the analyses described in chapter 3 will be carried out. The results will then be the foundation of knowledge used to develop a program of affordances for the case. The proposed process is a test- and it will later be evaluated if the process can bridge the gap between knowledge and practice concerning quality in children's environments and further, if this is a way for landscape architects to contribute in the planning process. Ammerud Elementary School will guide my direction.

4.1. Introduction of the case in which the results from the quality assessment and user participation were applied- the environmental context

Fig. 4.1. Map over the city of Oslo. The Ammerud area is marked with a circle.

The community of Ammerud belongs to Grorud borough in Oslo municipality and is situated approximately 10 kilometres north east of the city centre of Oslo. It is neighbouring the forested area called Lillomarka- a vast and wild nature recreational area that extends to the north of the community. To the east and west are residential areas, and in the south more densely built areas and the subway.

The borough of Grorud is multicultural, with inhabitants representing 169 countries. 48% of the population are immigrants, compared to the average of 30% in all of Oslo. The Ammerud community has a mixture of housing types; 68% live in blocks, 22% in attached houses and 10% in single-family units. This is roughly the situation for Oslo overall. The difference in living conditions for the population of Ammerud are that some homes are overcrowded. 4,6% of people have less than 0,5 rooms per person, compared to 1,4% of people on average in Oslo (Wiggen, T., Thorsdalen, & Østby, 2015).

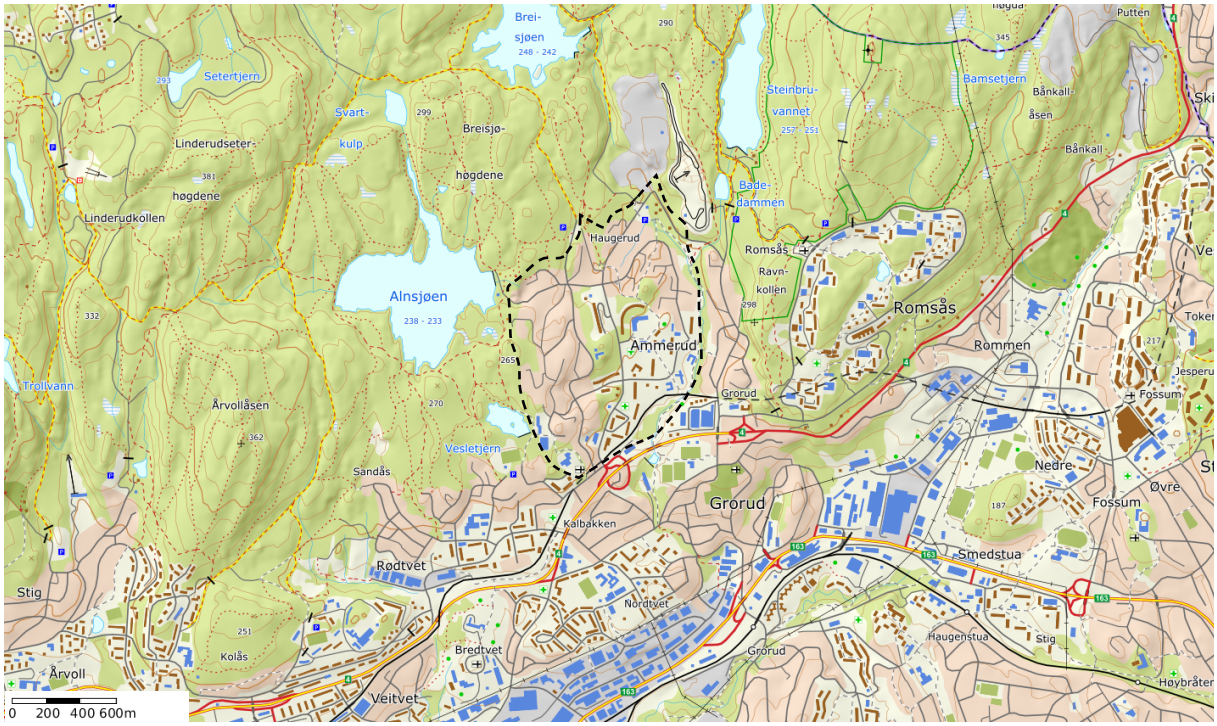


Fig. 4.2. A map of Ammerud and neigbouring areas. Ammerud is marked with a black dotted line.

Fig. 4.3. Ammerud Elementary School and surroundings. The residential areas are a mix of blocks and single-family houses. The forest Lillomarka is seen in the background

Fig. 4.4. Ammerud Elementary School and surroundings seen from north west

1. Residential area, single family houses
2. Residential area, apartment blocks
3. Preschool
4. Grorud centre, shopping mall
5. Grorud subway stop
7. Ammerudhjemmet, elderly care centre
8. Residential area, aparment block "the banana block"
9. Bus stop
10. Shops or industry
11. Ammerudgymmen, outdoor gym
12. Ammerud pumptrack, bike circuit

Ammerud Elementary School

School yard borders

Fig. 4.4. Orientation for the neighbouring areas, to Ammerud Elementary School

4.1.1 The school yard of Ammerud Elementary School

Type of school: grade 1-7, 5/6 to 12/13 years old.

Number of children: 590 (for the school year 2019/2020)

Built: The school has been at the same location since 1967, but the building and school yard was built new in 2005

Size: 11 824 m2

Square meter/child: 20

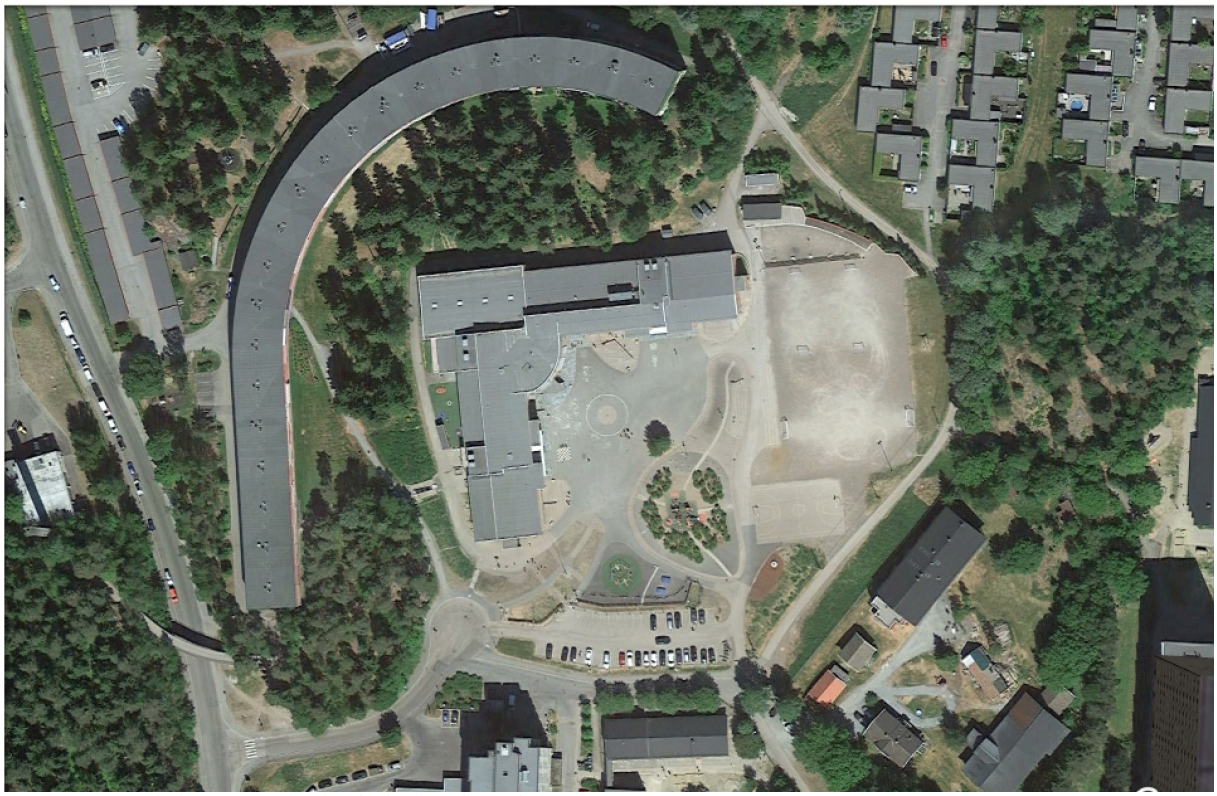
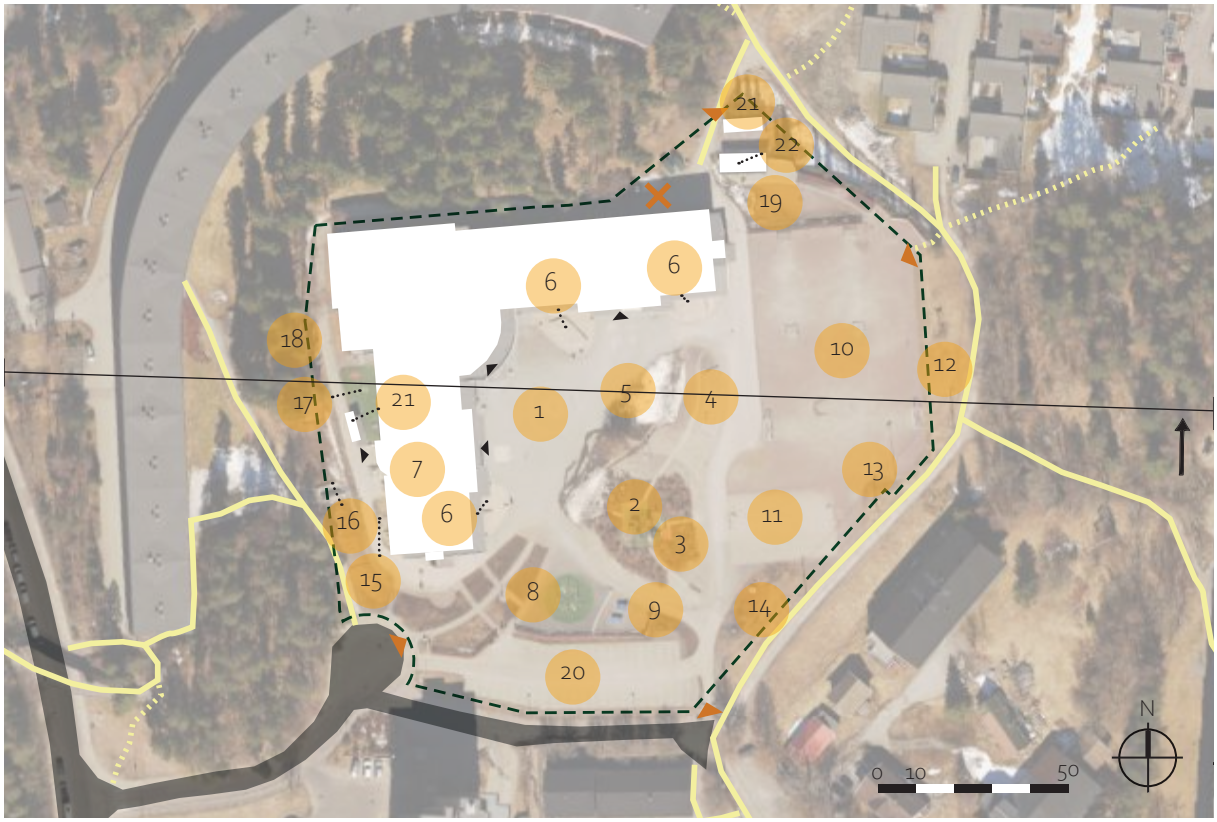


Fig. 4.5 Ammerud Elementary School and school yard, aerial photo.

Fig. 4.6 Ammerud Elementary School

Fig. 4.7 Ammerud Elementary School behind apartment blocks



1. Open asphalt area w. markings for group games, chess.
2. The climbing structure.
3. Bushes around the climbing structure.
4. The asphalt hill "Haugen", w. steps/sitting steps in east.
5. Two alder trees.
6. Sitting areas w. one long bench in each area.
7. Two tables with benches around them.
8. Swings, six swings in a hexagon form.
9. Two tables for ping pong.
10. The soccer field.
11. The basketball court.
12. A grass hill w. the moose statue on top.
13. A small grass hill.
14. A grass hill, with a sunken area. Small metal play item.
15. Sand box.
16. The steep long slide
17. Plastic carpet area with small play items; gymnastics bar, ping pong table, small hump, word games
18. Large pine trees, rocks and unmanaged vegetation.
19. Bike parking are.
20. Parking lot.
21. Storage buildings
22. Seating area, under roof.

Ammerud Elementary School building

School yard border (no fence)

Road for motorised traffic

Walkways/ bike path

Trails through green areas (no maintenance)

Radius 200 meters from the school

Delivery point

Access points to the school premises

Entrance to the building

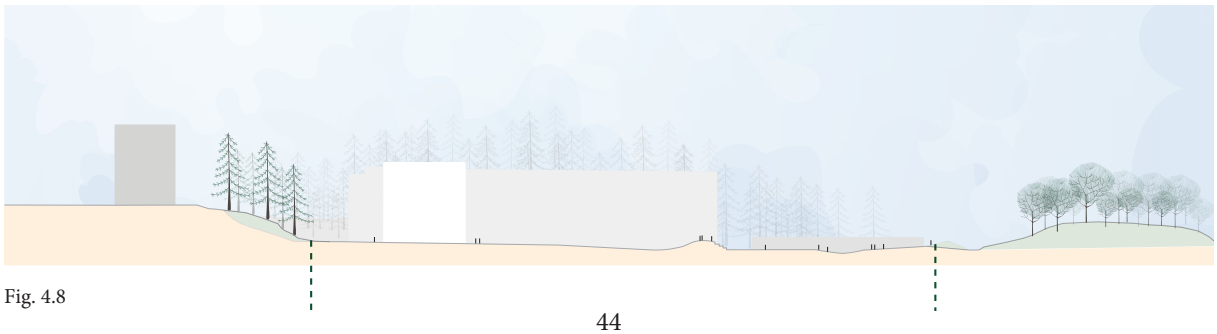


Fig. 4.8

Fig. 4.9

4.2 Assessing quality in Ammerud Elementary School yard

4.2.1 How the assessment was completed

The quality assessment of the school yard was conducted on the 18th of March 2020. The weather was clear and sunny and about ten degrees Celsius on the day of the site inspection. The ground was bare and wet and there were no leaves on trees or bushes. Grass areas were old plant material from last year and had a pale-yellow colour. The school was closed at the time, due to the covid-19 virus and the school yard was therefore empty of children. There were hardly any cars out on the streets and no people walking or biking in the neighbourhood.

The characteristics are previously defined in more detail in the evaluation chart in chapter three, but in summary the characteristics to be assessed are to be found under the following theme headlines:

Policies addressing the methods for planning and design, Geographical context focusing on the school yard in relation to its surroundings and Size of the school yard, were all assessed using policy documents and maps. For Geographical context, walking in the neighbourhood and doing observations were done as a compliment to maps.

During the site inspection characteristics to be found under the headline Play area attributes where assessed. The play area attributes address the physical appearance of the school yard. Characteristics under the headline Enabling factors, assessing affordances for parents or guardians, were also assessed during the on-site visit. The evaluation chart presented earlier, in chapter three, was used to mark the scores.

4.2.2 Description of the school yard based on the assessment tool

For assessing policies that control the methods for planning and design, this has been evaluated on a municipal level, as well as by using experiences from the case school.

Oslo municipality do not operate with norms for area for school yards but have guidelines for content and functions (Thorén et al., 2019). On a local level, it is observed that the management collaborate with other actors and with the users of the school, throughout the planning process. The focus seems to be to use materials and to promote a design that is possible to maintain, with the resources available. There seems to be a strong commitment for the project and the children, who are invited to share their ideas. These are to be analysed and the plan is that they will be implemented in the project. There are plans to invite neighbours to speak their mind for what they wish for, in social media. Except for giving ideas, there seems to be no further discussion throughout the planning process for children at the school or for neighbours.

The size of the school yard is 11 825 square meters, using the definition of available play area as presented in the introduction chapter[6]. With a total of 590 children attending the school, this give each child 20 square meters to use.

During the site inspection the school yard was observed as described below:

The area surrounding the school consists of residential neighbourhoods, with mainly blocks and one storey single-family houses. Residential areas are located close to the school premises. There are also a few shops, an elderly care centre and day care centres close-by. Access to the school by public transportation is considered satisfactory, allowing personnel and visitors, to reach the school from other parts of the city. Older children attending the school may use the local bus route if necessary. There is access to the school by car from one direction, but other that the school is connected to the residential areas in the community and to the subway station by pedestrian walkways and bike paths.

The overall traffic situation is understood as safe in the immediate surrounding area of the school, but there might be situations and circumstances, for example during winter if there is a lot of snow, where children need to walk along streets with parked cars, or stacked snow in dark conditions that are perceived as less safe. There is no traffic through the school yard, but deliveries can drive through the play area to reach the drop off area. The school and the surroundings are not expose any to disturbing noise or pollution, as observed through site visits.

There are green areas with lush green vegetation during summer, just outside the western and eastern borders of the school yard where it is possible to explore, play and find secret places. These patches of nature in between houses and pathways might possibly afford to build small and simple dens, forts, bush houses, tree houses or the like. The school building is placed in the north-western corner of the school yard, allowing for a larger connected and coherent play area than if the building had been centred on the plot.

6 The available and accessible are possible to use by children
-The gross area minus buildings, parking lots and other traffic related areas, bike parking, litter bins or the like
-The area intended for play, stay and recreation

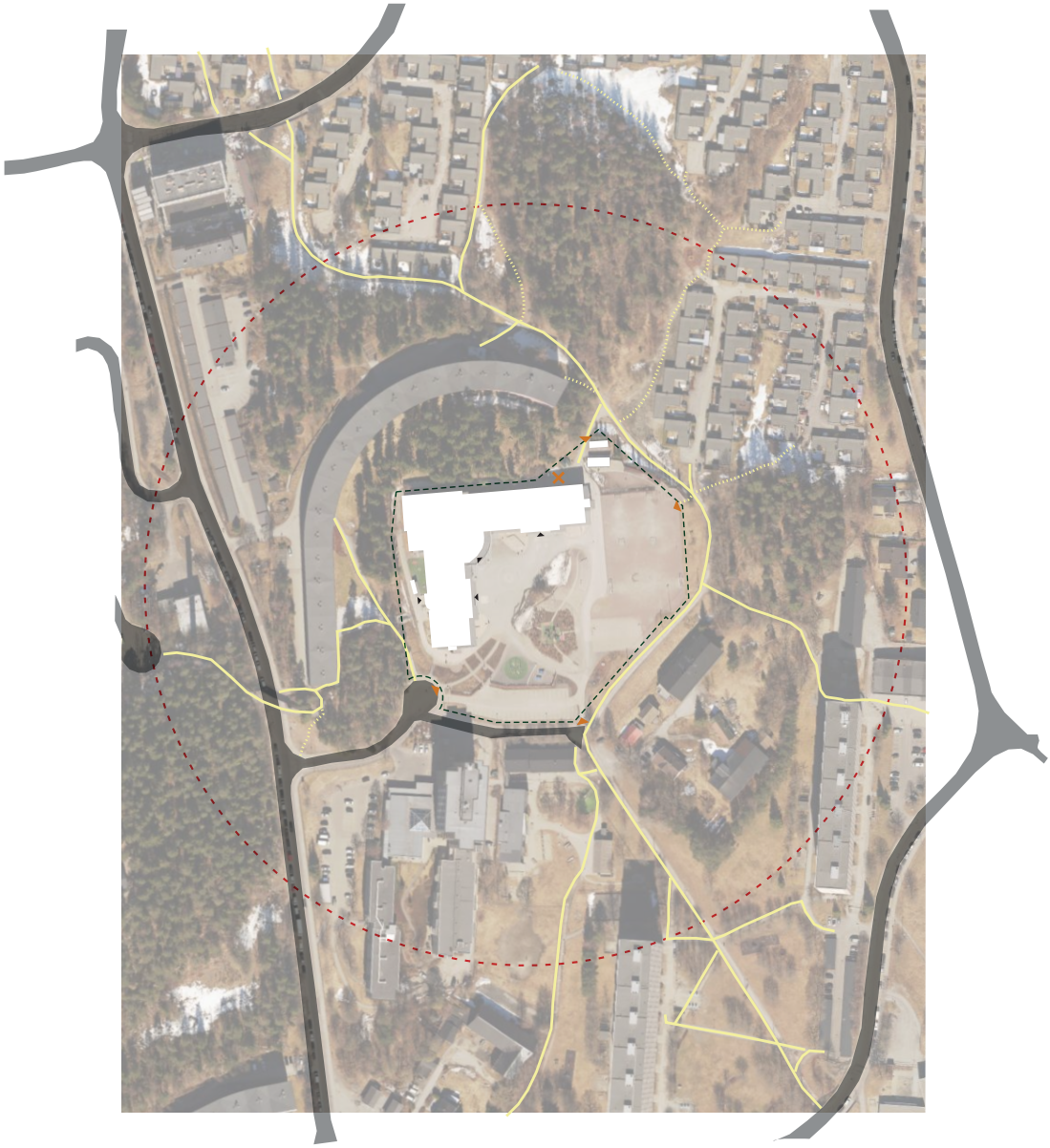

Ammerud Elementary School
School yard border (no fence)
Roads, for motorised traffic
Walking or biking only
Pathways through nature areas
200 meters radius from the school
Delivery drop off zone
Main access points to the school premises
Main entrances to the school building

Fig. 4.10

The school yard is perceived as flat and vast, with isolated elements of terrain hights or structures- which are also appearing as “islands” in the open flat landscape. Examples of this is a climbing structure and a steep hill. There is also a large soccer field and a basketball court, along with unprogrammed flat space. There are few elements present that create rooms and divide the space into smaller areas, but some terrain differences add to the spatial pattern. There is a slide in the western end of the school yard that is making use of the terrain, creating a rather long and steep slide. The school yard is perceived as open and unprotected from the elements- there is very limited vegetation in the school yard, and nearly nothing that can create enough shade or shelter to playing children. The evaluation of sun and shade patterns in different areas of the school yard are conducted through site observations.

There is a structure with swings, a climbing structure and two ping pong tables in the southern part of the school yard, and a sand box, a ping pong table and a few single-person play equipment like a small gymnastics bar, on the western side of the school. There are also some markings for games on the asphalt in the open space. There is not much use of colours in the school yard, except for the bright red plastic carpet in the seating areas placed along the school building and a bright green plastic carpet used on the west side of the school building. There is also a green plastic carpet under the climbing structure.

There are few seating and meeting options in the school yard. Three long benches close to the school building offer seating, but there is no possibility for persons to face each other when talking and there are no tables there. On the west side of the school building there are two large square tables with benches all around- these are also rather large, offering more people to join in and being social. There is no lighting observed in the school yard, but the soccer field has two spotlights.

The school yard is dominated of asphalt surfaces, with a few areas of rubber flooring for example underneath play structures and in seating areas. A relatively large part of the school yard is dedicated to a football field with gravel. Vegetation is sparse with some shrubs by the climbing structure. These bear signs of extensive use and many branches are broken or damaged. There are three small hills, mainly providing a frame for the soccer field, that are covered with grass. There are two common alder trees in the middle of the school yard. The trees are placed at the lowest point in the school yard and this is where all the water from the asphalt area, eventually will end up. The alder trees are still rather small.

On the two following spreads, there will be a demonstration of how the questions in the tool was answered and scored.

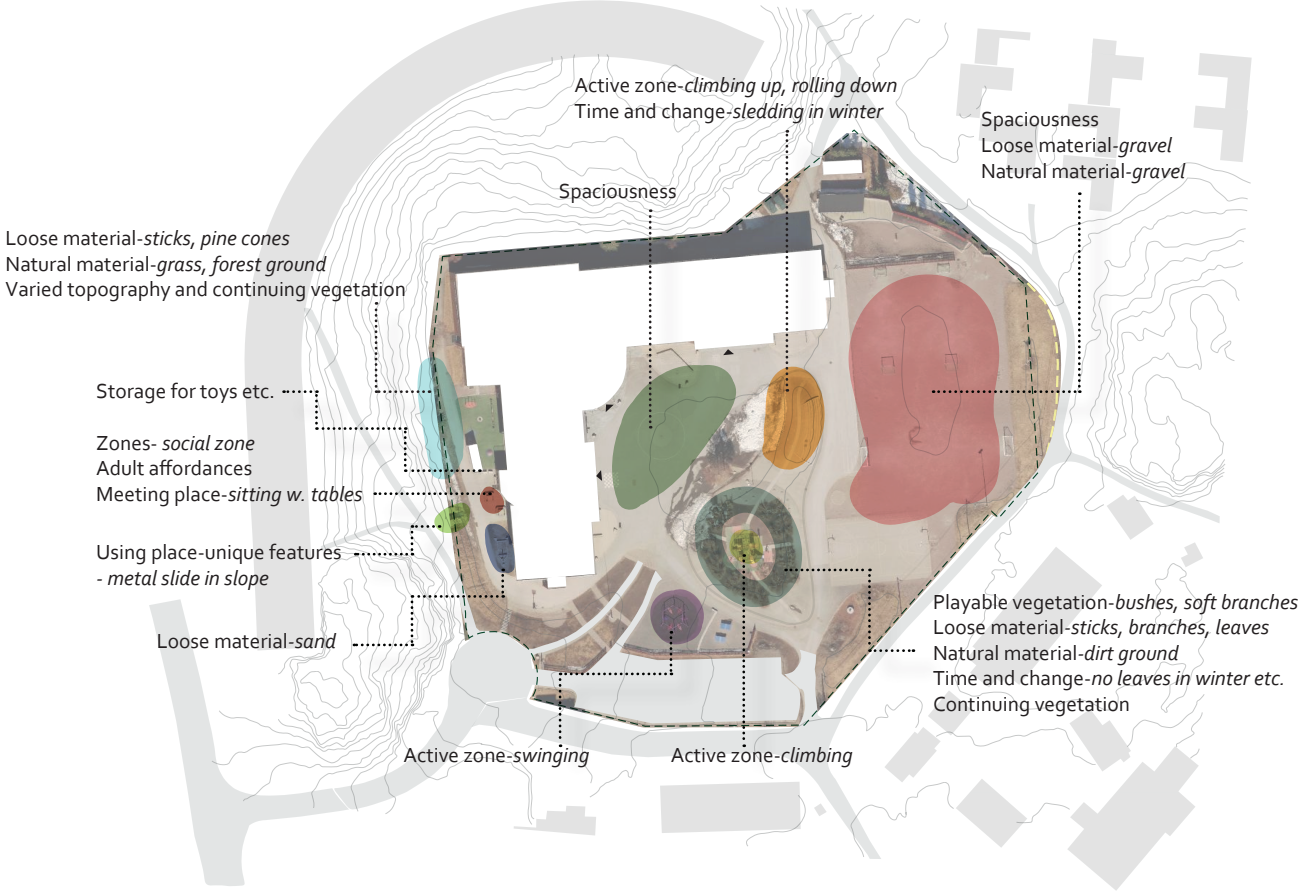


Fig. 4.11. The map shows areas that contain characteristics that give quality to the school yard. The colours mark the different areas.

SCHOOL YARD QUALITY EVALUATION– criteria

POLICIES

Approach

Teamwork (0-1p): Do the administrative management have a holistic approach to functional use, maintenance and the future of the school yard? Do the management encourage and engage in teamwork with, and between other actors, such as operational management (gardener/janitor)? Do the administrative management collaborate with other users of the school yard?

Strategies and accountability (0-1p): Have the administrative management worked out strategies, routines or guidelines (for content and design, area norms, universal design, etc.) for a sustainable development of the school yard and use these regularly?

Child friendliness

The child perspective (0-1p): Do the management administrating the school yard work towards giving children in the area free mobility, acess to their own places, acess to green surroundings, acess to the public space and access to meeting places? Do the management work towards limiting traffic in the local community?

Children's perspectives (0-1p): Is the management involving children early in the process when developing and designing the school yard? Is the management working towards realising children's ideas and aspirations?

Participation (0-1p): Is the management including the future users of the school yard to discuss its function as a meeting place for the local community? Is the management involving children, youth and adults in how the school yard can be used in the local community? Is the management discussing the design for the needed functions with the future users of the school yard?

GEOGRAPHICAL CONTEXT

Place specific characteristics

Access and proximity (0-1p): Does the school yard offer safe traffic conditions in a radius of 200 meters? Is there access to other play areas nearby- 300 meters to a green area or playground? Is there a well-developed net way of pedestrian walkways and bike paths that promotes safe mobility for children, youth and adults in the neighbourhood? Is there sufficient public transportation and access to the school premises by pedestrian walkways or bike paths? Where access is good- has parking lots been reduced to free space for play?

Location and sourroundings (0-1p): Is the school yard located according to the following?

- Limited exposure to pollution or disturbing noise
- No passage or way through the school yard
- Located near a green area with natural elements offering a variety of play opportunities
- In proximity to where many people live, to pre-schools or recreation, culture, service etc.

Location of building on the premises (0-1p): Is the "footprint" of the school buildings reduced as much as possible? Is the building placed so that as much as possible of the premises can be used for play?

Childrens possibilities for, and ability to have, their own places (0-1p): Do children have access to nature or other play friendly places close by where they can go themselves and that they can affect and manipulate? Are chilren given the opportunity to create their own places, through playable vegetation and loose materials: dens or play-houses in the bushes, dens or play-houses from loose material, tree-top play-houses, etc.?

SIZE

Enough space

Size of the school yard (0-1p): Do the size of the school yard corresponds to the number of children attending the school according to the following guidelines:

- For schools < 99 children, the smallest combined play area is minimum 3000 square meters.
- For schools with 100-499 children, each child has 30 square meters.
- For schools with more than 500 children, an extra 15 square meters/child applies to the area norm.

Area per child (0-1p): Do the school yard offer 30 square meters to play at, per child attending the school? (The critical limit for school yards is 20 square meter per child, which is shown in grey in the figure).

The figure can be used to scribble the square meter each child has to play at

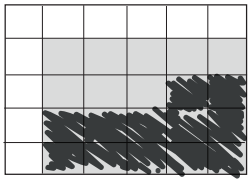


Fig. 4.12

Teamwork: The administrative management are engaged in the future of the school yard and collaborate with other actors. To some degree there is collaboration with other users of the school yard.

Strategies and accountability: The municipality does not have area norms, but have guidelines for functions and design and are required to plan for universal design. It is challenging to find out, to what degree the guidelines are being used.

The child perspective: The issue is difficult to answer, and needs a thoroughly investigation. The score is given based on the local initiative to rehabilitate the school yard with the aim to give the children a better outdoor environment.

Children's perspectives: Children are invited to share ideas and the aim is to realize children's wishes.

Participation: To a limited extend. There are plans to ask for input on social media.

Access and proximity: The traffic conditions are safe in a radius of 200 meters from the school and several green areas close-by. There is a well developed netway of pedestrian walkways and possibility to use a bike as transportation. Public transportation is ok. Delivery cars are allowed to drive through the school yard, to reach the drop off spot.

Location and sourroundings: There is limited exposure to pollution and disturbing noise. There is no way through the school yard, but delivery cars need to drive across the school yard to reach the delivery drop off. There are smaller green areas close by as well as a variety of play oppurtunities. The school is located close to where many poeple live, to pre-schools and service.

Location of building on the premises: The footprint of the building is concidered small and the location on the premises is good, giving a continuous area to be used for play.

Childrens possibilities for, and ability to have, their own places: There are small areas of nature close to the school yard and along the northern and western borders of the school yard. There are some possibilities to find loose material, playable vegetation and to build dens.

Size of the school yard: The school yard is 11800 square meters. With 590 children attending the school, this gives each child a little moore than 20 square meters to play at. For a school with so many children, they would need 30 + 15 sqaure meters per child.

Area per child: Each child has a little moore than 20 square meters/child to play at. This is the critical limit, according to area guidelines.

SCHOOL YARD QUALITY EVALUATION– critera

PLAY AREA ATTRIBUTES

Characteristics

Spaciousness (0-1p): Does the play area offer space for motion in several directions and offer possibility for play with action : run, jump, climb, swing, balance, go sliding, tumble, roll down a hill, etc.? Are there several middle-sized areas for different use, rather than large monofunctional flat areas (e.g. football field)?

Zones (0-1p): Is the play area divided into different zones, for example: social – spacious - wild? Is one of the types of zones a calm zone, with possibility to withdraw from the masses?

Spatiality (0-1p): Does the play area have a diversed spatial design with options to choose between different sites for the same play activity? Are "rooms" placed consciously in relation to one another and inter-connected? Is there a selection of natural material: exposed bedrock, logs, rocks, bushes, trees, etc. that can create or add to spatiality?

Variation (0-1p): Is there a variation in play opportunities? Is there variation at the same site and also between different sites in the school yard? Are there challenges for all ages? Are there location-built play equipment and tools available ? Is it possible to build and construct things?

Inclusion & sociability

Using place-unique features (0-1p): Do the school yard offer play equipment that are integrated in nature and into the landscape, such as slides that make use of the terrain and topography, or play equipment placed under vegetation? Do the vegetation in the school yard provide a natural coverage, where maximum 50% of the sky is visible where children usually play?

Availability (0-1p): Are the areas that offer sand- and water play, slides, swings, climbing or cycling at least the same size as areas offering ball games? Is the school yard designed for persons with different physical or mental abilities, such as areas customized for wheelchairs; swings to lay down in and visual contrast?

Meeting place (0-1p): Does the school yard provide lighting? Does the school yard offer a selection of seating places, tables or a fire pit? Does the school yard offer unprogrammed places and structures and tools whose functions are not pre-defined? Does the school yard offer access to unprogrammed vegetation?

Storage (0-1p): Does the school yard offer storage? Is it accessible for everyone? Does the storage offer toys and movable play equipment?

Possibilities to understand the environment & a larger context

Time and change (0-1p): Does the play area change and offer different things to do as seasons and weather change: sledding, jump in rain puddles, play with the fallen autumn leaves, eat berries and fruit, etc.? Are the four elements- earth, fire, air and water exemplified in the play area: to cultivate and grow plants, use a fire pit, use wind shelters, a weathervane, do water play, etc.?

Eco system services (0-1p): Are there eco system services represented within the play area: birdhouse or nesting-box, insect hotel, meadow, dead wood, butterfly flowerbed, open storm water management, cultivation, etc. ?

Natural material (0-1p): Is the play area consisting of natural, non-toxic materials? Is part of the play area built with recycled materials? Is part of it built on site to fit the location? Is there a variation of permeable ground materials? Are hard surfaces and rubber carpet or artificial grass, limited?

Site–specific features and possibility to affect the place

Sun and shade (0-1p): Do the play area offer places to play or sit, both in sun and shade to avoid UV rays? Is vegetation creating the shade?

Varied topography and continuing vegetation (0-1p): Does the play area offer varied topography including small hills, slopes, rock formations or other terrain height differences? Is the proportion of space with topography and continuing vegetation larger than 50% of the play area?

Playable vegetation (0-1p): Do the play area offer playable vegetation like trees to hide under or climb in, bushes to play with or playfully trimmed pathways in high grass, etc.?

Loose material (0-1p): Does the school yard provide loose materials like sand, sticks, branches, pinecones, leaves or needles, rocks, berries or blocks? Are they easily accessible (placed fully exposed in the school yard or in boxes)?

ENABLING FACTORS

Enabling & promoting visits

Adult affordances (0-1p): Does the school yard provide meaningful things to *do* for adults too? Are there appropriate seating options? Is it possible to sit by a table and bring food? Are there meeting places to socialize? Does it provide a variety of play equipment? Does it have a high degree of nature?

Fig. 4.13

Spaciousness: There are possibilities for motion in different directions and children can run, jump and climb at different locations . The school yard is dominated of large flat areas, either empty and unprogrammed or dedicated to soccer or basketball.

Zones: The school yard have different zones, but these are percieved more like islands in a flat asphalt and gravel landscape. The different zones does not offer different *types* of actvities- climbing, playing soccer or swing on swings are all action filled physical activities. There are no calm zone where one can withdraw from the masses and social zones are not optimally planned for socialization.

Spatiality: There are no percieved "rooms" in the school yard and few natural material that can add to creating rooms and a spatial design. The hill, called "Haugen" add some sense of spatiality. The climbing structure with bushes and shrubs also add spatiality. Along the western border of the school yard, the steep slope add spatiality. There is limited possibilities to choose between play sites.

Variation: A large majority of the activites offered at the school yard are pre-defined and does not offer a varition in activity. There are some possibilites for variation at the same site. The soccer field can be used for other sports and the spacious asphalt areas can be used for a variety of ball games or other group games. The shrubs may offer varied activities. There is little challenge for older children and limited possibilities to create things.

Using place-unique features: There is a slide at the eastern border that makes use of the terrain and height difference. Exept for two small trees in the middle of the school yard and the shrubs around the climbing structure, there is no vegetation incorporated and used in the planning and design of any play sites in the school yard. There is no natural coverage where children play and close to 100% of the sky is visable leaving children very exposed in the school yard.

Availability: There is a sand box, a slide, swings and a climbing structure available. Areas dedicated to ball games are approximately 3,5 times bigger than the area offering climbing, sliding, swinging or playing with sand (not included unprogrammed space of asphalt). There is no customisation for persons with disabilities.

Meeting place: A few street lights are places by the parking lot and along a close by walking path. There is also some lighting at the soccer fiield. There is a lack of seating places and little variation in seating options. The extensive asphalt area that is dominating the school yard is largely unprogrammed (exept for paint marks for games). The shrubs by the climbing structure is unprogrammed, as well as parts of the slope on the eastern border of the school premises. There are no activities to gather and come together for.

Storage: There is a small shed on the eastern side of the school with toys, large chessmen and small three wheel bikes. It is not clear if it accessible for everyone, or when.

Time and change: There are options for sledding in wintertime and to jump in rain puddles. Since there are very few trees in the school yard, autumn leaves are assumed to be scarce. The elements are not featured.

Eco system services: There are no eco system services represented in the school yard.

Natural material: The ground materials on the school yard consists of asphalt, gravel, rubber carpet and small patches of lawn. The gravel on the soccer field is permeable and natural. Play equipment like the climbing structure and the slide is pre-fabricated and made out of metal, plastic and wood.

Sun and shade: There is very limited or close to none, shade offered in the school yard.

Varied topography and continuing vegetation: There is a hill in the middle of the school yard and a slope at the western border of the school premises. The shrubs by the climbing structure covers a continuing area. The total area of topography and continuing vegetation makes up less than 50% of the play area.

Playable vegetation: The two trees has no low branches that invites to climb them. The form of the canopy (compact and round) makes them difficult to hide under. The shrubs by the climbing structure are possible to play with.

Loose material: Sand is accessible in a sandbox located in the southwest corner of the school yard, there is gravel at the football field and sticks and branches can be found where the bushes and shrubs grow. Along the north and west borders of the school yard, pine trees and spruce grow that provide cones.

Adult affordances: There are limited seating options in the school yard. There are a few long benches to sit at. The tables on the west side of the school are suitable to sit by and bring food. There is not a good variety in play equipment and there is not a high degree of nature in the school yard.

SCHOOL YARD QUALITY EVALUATION CHART

POLICIES

Approach

Teamwork (0–1p)		0,25
Strategies and accountability (0–1p)		0,25

Child friendliness

The child perspective (0–1p)		0,25
Children's perspectives (0–1p)		0,25
Participation (0–1p)		0,25

GEOGRAPHICAL CONTEXT

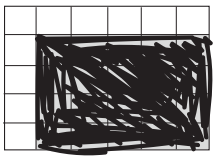
Place specific characteristics

Access and proximity (0–1p)		0,75
Location and sourrounding (0–1p)		0,75
Location of building on the premises (0–1p)		1,00
Childrens possibilities for, and ability to have, their own places (0–1p)		0,25

SIZE

Enough space

Size of the school yard (0–1p)		
Area per child (0–1p)		0,25



PLAY AREA ATTRIBUTES

Characteristics

Spaciousness (0–1p)		0,75
Zones (0–1p)		0,50
Spatiality (0–1p)		0,25
Variation (0–1p)		0,25

Inclusion & sociability

Using place–unique features (0–1p)		0,25
Availability (0–1p)		
Meeting place (0–1p)		0,50
Storage (0–1p)		0,25

Possibility for understanding the environment & larger context

Time and change (0–1p)		0,25
Eco system services (0–1p)		
Natural material (0–1p)		0,25

Place qualities and adaptive capacity

Sun and shade (0–1p)		
Varied tophography and continuing vegetation (0–1p)		0,50
Playable vegetation (0–1p)		0,25
Loose material (0–1p)		0,75

ENABLING FACTORS

Enabling & promoting visits

Adult affordances (0–1p)		0,25

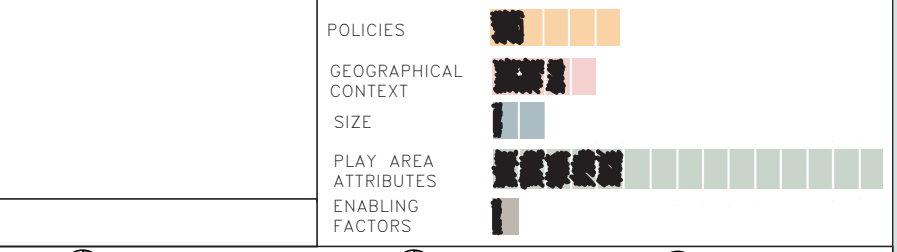
NAME OF SCHOOL: Ammerud Elementary School

SIZE in m2:
11824 sqaure meters

COMMENTS

DATE AND SIGNATURE

POLICIES (max 5p):	1,25
GEOGRAPHICAL CONTEXT (max 4p):	2,75
SIZE (max 2p):	0,25
PLAY AREA ATTRIBUTES (max 15p):	4,75
ENABLING FACTORS (max 1p):	0,25
TOT. SUM (max 27p):	9,25



=1p =0.75p =0.5p =0.25p

Fig. 4.14

From the analysis using the quality assessment tool, it was found that the children have possibilities for motion in different directions and to run, jump and climb but a large part of the school yard is dedicated to sports fields, perceived as monofunctional. The different zones are all action-oriented, offering little opportunities for other types of activities. There are no possibilities to withdraw, to find a calm place and relax, or to hang out as a group. Overall, there is very little spatial design that may create a sense of room. Consequently, there are no rooms with different character, different sized rooms, or other variation between rooms. The activities offered are mostly pre-defined and give little freedom for other types of play, to explore, construct or being creative. There is little adaptation to and use of the specific site and landscape, largely due to that the school yard is very flat. It is evident that the space is not available for all- large areas are dedicated to soccer and basketball fields and hence made unavailable to those who do not play these sports. As for adaptation to persons with disabilities, many zones are possible to reach but the offered activity in that zone is not available.

Meeting places are limited and are only found at the west "back side" of the school where two large tables are placed. Benches in the main school yard have a design that seem to prevent social interaction by placing people on a long bench. There is no creative space to gather around. As for children's possibility to experience and learn about the environment and a larger context, such as experience the changing seasons and how it may provide different affordances, there are very few elements in the school yard that enable this, primarily due to lack of vegetation. The limited content of vegetation also add to the fact that the school yord lack loose material, anything to manipulate and make their own. There is no shelter from the sun, wind or rain, neither man-made or from tree canopies. Overall, the school yard is offering almost exclusively hard, non-permeable surfaces and the most used materials are asphalt and plastic carpet.

It is also noted that even though a characteristic, or quality, is present in the school yard, it may not be available to all children, because there are too many children competing over the same affordance.

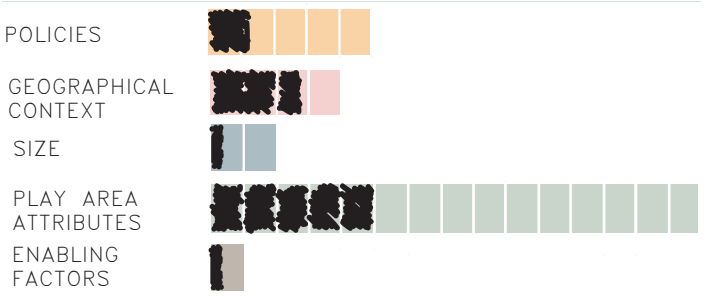


Fig. 4.15

Figure 4.15 describes a compilation of the result from the quality assessment, revealing to what extent the school yard meets the requirements for each theme of categories. The analysis reveals that the school yard lacks quality primarely regarding *policies*, *size* and *play area attributes*. These themes can be addressed specifically, to increase quality in the school yard.

4.2.4 Results from using the assessment tool

The school yard scored low when conducing the assessment using the tool, meaning there are few qualities found here. It lacked qualities in the following categories:

For questions regarding policies, the score was 1,25 out of a possible 5,0. This is considered low. As for geographical context, this is a theme that the school scores rather high at, 2,75 out of a maximum 4,0 points. These are qualities that are difficult to address and resolve if they were lacking. Traffic situation, with easy access by pedestrian walkways and possibility to bike safely to school is good. The location close to residential areas, bus stop and subway stop is also good. The drop off spot for delivery, which brings car traffic in and through the school yard is less positive and lower the score. Green areas near-by are bettering the score.

The score for size is 0,25 out of 2,0. Each child has 20 square meters to play at, which is the minimum and considered a critical limit. The recommended norm is 30 square meters per child, and in the situation of Ammerud Elementary School, where they have more than 500 children- another 15 square meter per child is recommended.

For play area attributes the school yard scores rather low, with 5,0 point out of a total 15,0. In particular, the school yard lacks qualities concerning zones, spatial design, and variation. The school yard also lacks qualities linked to use of splace-unique features such integrating play equipment into the landscape. This is difficult if there is a lack of variety in landscape forms and very few trees. Further, the school yard has an un-even space distribution, with unproportionally large areas dedicated to sport. It is not providing access for persons with disabilities. It is possible to get around in large parts of the school yard, but when reaching a site, they cannot participate in the activity- hence no affordances are offered. Meeting places are insufficient, especially since the school yard should function as a community meeting place. All the qualities that are connected to the possibility to understand the environment and larger context are lacking. It also lacks playable vegetation. The school yard leaves the children very exposed to the sun, providing no shelter or coverage. It is possible to find loose material in the school yard, but in relation to the high number of children, the proportion of loose material is considered low. As for adult affordances, this is related to meeting places which is also lacking as well as high degree of nature, which is absent.

Figure 4.16 show an overview of affordances and in what areas of the school yard they are located. The areas not providing affordances are concidered “empty”, and are also identified in figure 4.16. The following list show the lacking qualities, that may be implemented in the empty areas.

- **Spatiality**- Spatial design, "rooms" and variation between rooms. Natural materials to create rooms.
- **Zones**- Zones that are wild, social, calm etc.
- **Using place-unique features**- Play equipment integrated into the landscape, under vegetation, in terrain.
- **Availability**- Inclusion of all, different preferences for play and different abilities to play. Even distribution on space.
- **Meeting places**- A variation of seating options, some with tables. A fire pit. Other types of meeting places like unprogrammed vegetation, places to be creative.
- **Time and change**- Bring in the elements.
- **Eco system services**.
- **Natural materials**- Toxic free, permeable and natural materials, for structures and ground materials.
- **Sun and shade**- Protection from the sun, use vegetation to create shade.
- **Playable vegetation**- to hide, climb or play in vegetation
- **Loose material**- smaller things to collect, sort, move around.
- **Adult affordances**- focus on social meetings places, variation in play equipment. High degree of vegetation.

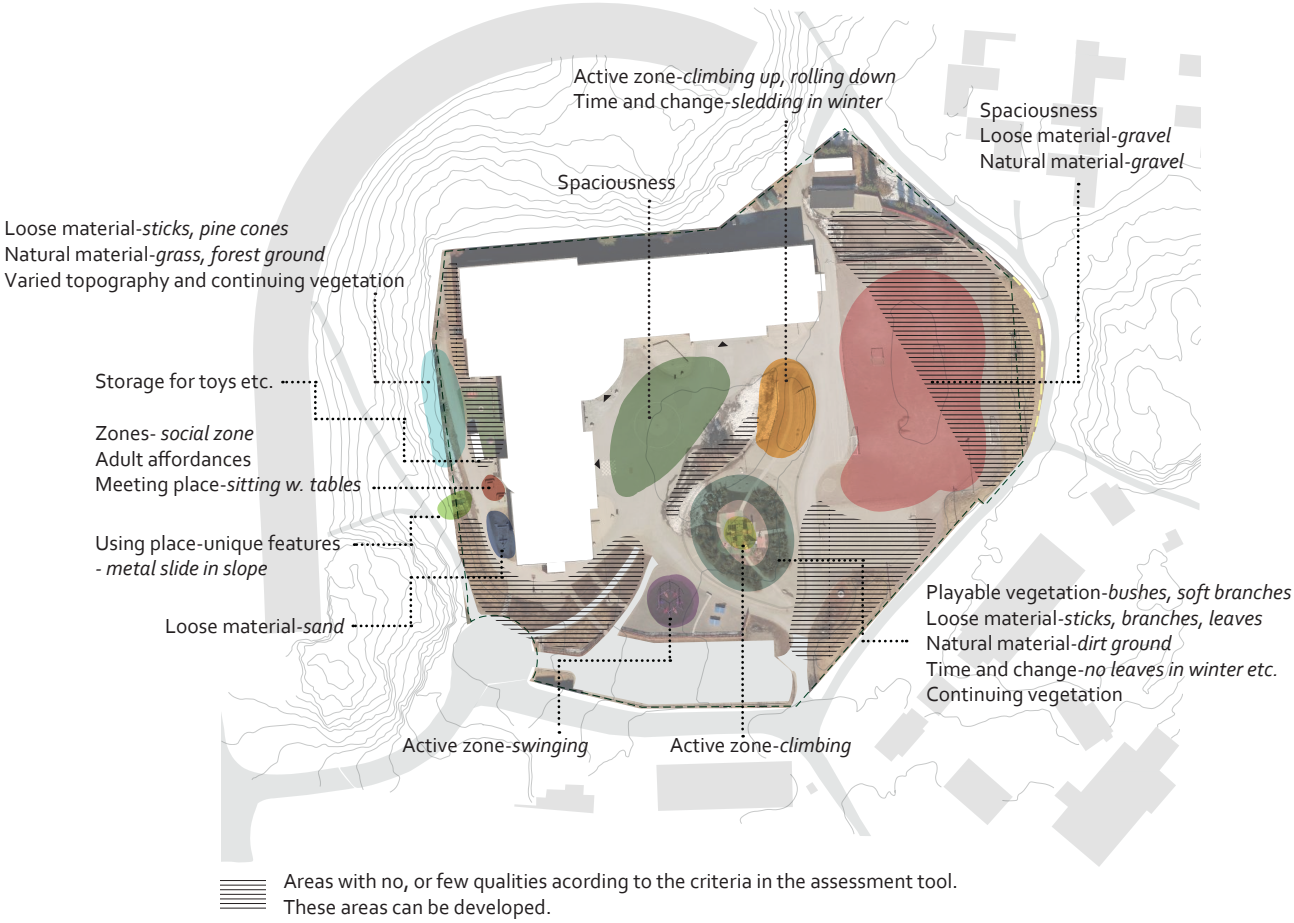


Fig. 4.16. The map shows areas that contain characteristics that give quality to the school yard. The colours mark the different areas. Hatched areas are "empty"- offering limited quality.

4.3 Children's view on their school yard – what they do that has meaning to them

4.3.1 How the user-group participation study was carried out

The approach to this study was described in chapter 3. This is a detailed description of how the user group participation study was carried out.

Due to strict rules regarding social distance and group meetings, I did not get the opportunity to meet the children in the study. Through mail and phone communication with the principal of the school, who approved the study and through great help from the school superintendent, it was decided that the questionnaire were to be e-mailed to the superintendent who would print it in colour and hand the prints out to the teachers in 4th grade, who would then hand them out to the children. At the time, only 1st through 4th grade were allowed back in school after a long time of home schooling. The 4th grade was chosen, because it was expected that they would be competent to independently read the map, independently read the questions and have the ability to put down written answers when I could not be there to describe the task and answer questions. In Norway children in 4th grade are 9-10 years old. It was considered reasonable that they could understand questions in a questionnaire, read a map showing their school yard and answer the questions by written responses and by marking places on the map.

It was discussed whether, and which instructions, would be given to the teachers, so they could explain the task to the participating children. It was decided that the teachers may call me at any time if they had questions. I did not get any phone calls from the teachers.

The questionnaires were handed out to all children in 4th grade at Ammerud Elementary School present at the time, during the second week of May 2020. In total, 106 replies were collected at the end of the week. 51 girls and 49 boys filled out the questionnaire, as did six children who did not want to mark gender or seem to have forgotten to mark gender. The children completed the questionnaire in school, during class.

4.3.2 How the material was analysed

When I had collected all the questionnaires, I first sorted them in two piles- girls and boys.[7] The However, the focus of the analysis was not the differences between girls and boys and their preferences for play. The six unmarked replies were split, and blindly placed with three in each group. The purpose of the analysis was to find out what the users of the school yard did there, meaning what affordances they found, and where.

After sorting the questionnaires, I started reading them through. I wrote down keywords along the way and tried to get an overall understanding of the material. I noticed that many of the children had marked roughly the same places and mentioned the same activities. I started to see a pattern. I then read the questionnaires through a second time and wrote down, more systematically, the places the children mentioned for each question as well as what they like to do at this place. This way I ended up with a list of places in the school yard, and the different activities linked to each place. The list represented the affordances found at different sites in the school yard. It was

7 Detailed answers from the boys and girls respectively can be found in appendix 3

soon clear that the children mainly preferred the same handful of places and found roughly the same affordances there. The complete list is added as appendix 3.

From the list I made diagrams with the top three most popular perceived affordances for each question, for girls and boys, respectively. At last I combined the data and mapped prevalence of affordances linked to place, to illustrate how different places can afford different things and how the use of space is affected by this- some areas are heavily overcrowded because of this, while some only seem to afford one thing, and that some areas are empty, meaning they do not seem to afford the children anything. Diagrams and schematic maps are presented in chapter 4.3.3.

4.3.2 Quality of the material

Based on the responses from the questionnaire, the questions were adequately formulated and there were overall few misunderstandings. For the question "What do you like to do in summertime?" and "What do you like to do in wintertime?" the context I was asking in, referred to the school yard. A few children answered that they like to celebrate Christmas in wintertime or that they like to eat ice cream in summer. Generally, these types of misunderstandings were rare. A few responses were a little too identical- these answers were often placed after another in the bunch of replies. It is an assumption that these children sat by each other when answering the questions- which in that case affect the result.

Out of the four main questions in the questionnaire[8], the first one gave the most detailed answers. Towards questions three and four, the answers got less detailed and were sometimes answered with just one word. It was also obvious that the girls answered the questions with more details than the boys.

8 Where is your favourite place in the school yard? What do you like to do there?
What other places do you like? What do you do or play there?
What places do you not like? Why?
What do you like to do in wintertime? Mark where on the map. What do you like to do in summer? Show this on the map.

4.3.3 Results from the children's participation study

The answers from the children has been illustrated in the diagrams below, which focuses on what the children *do* in the school yard, e.g. the affordances they find there.

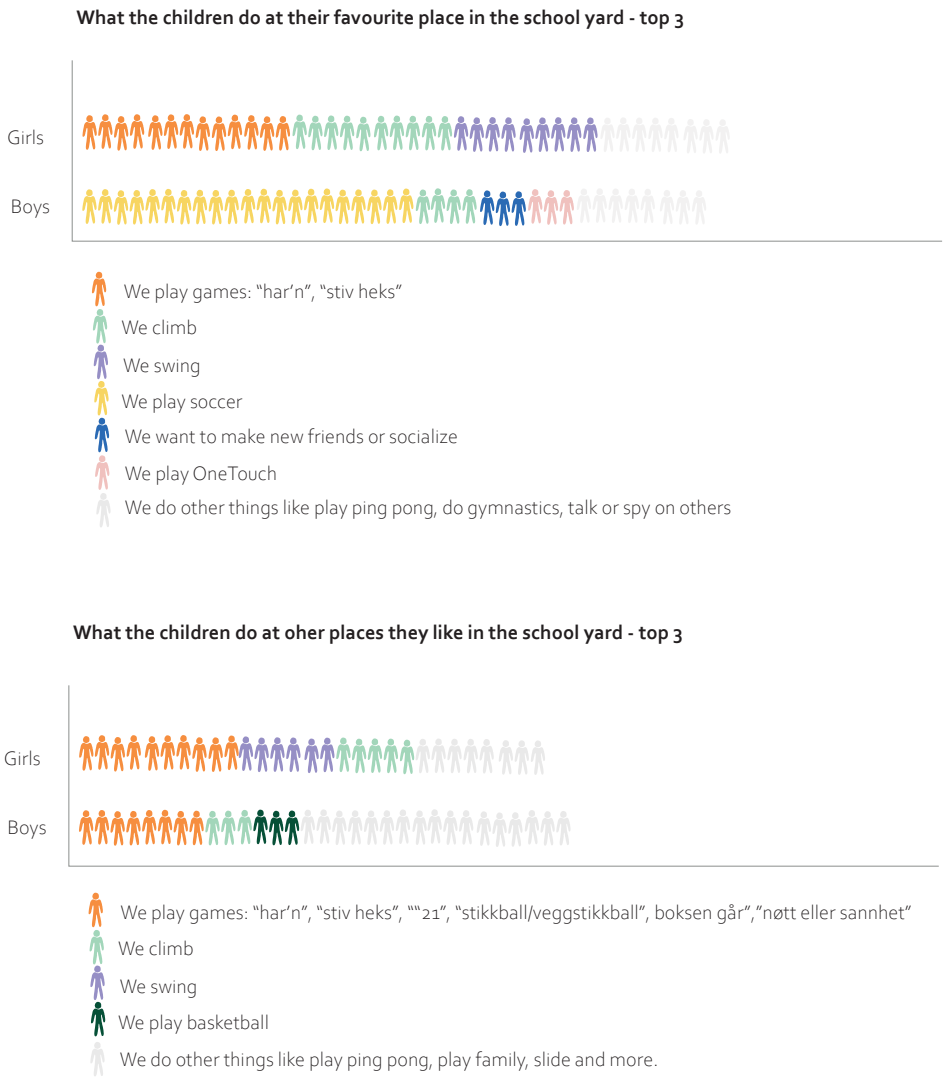
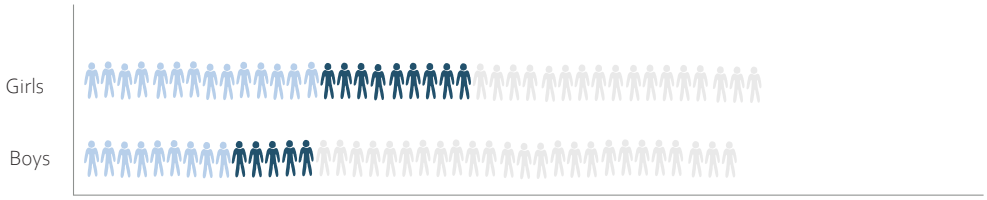


Fig. 4.17.

What the children like to do in the school yard in wintertime - top 2



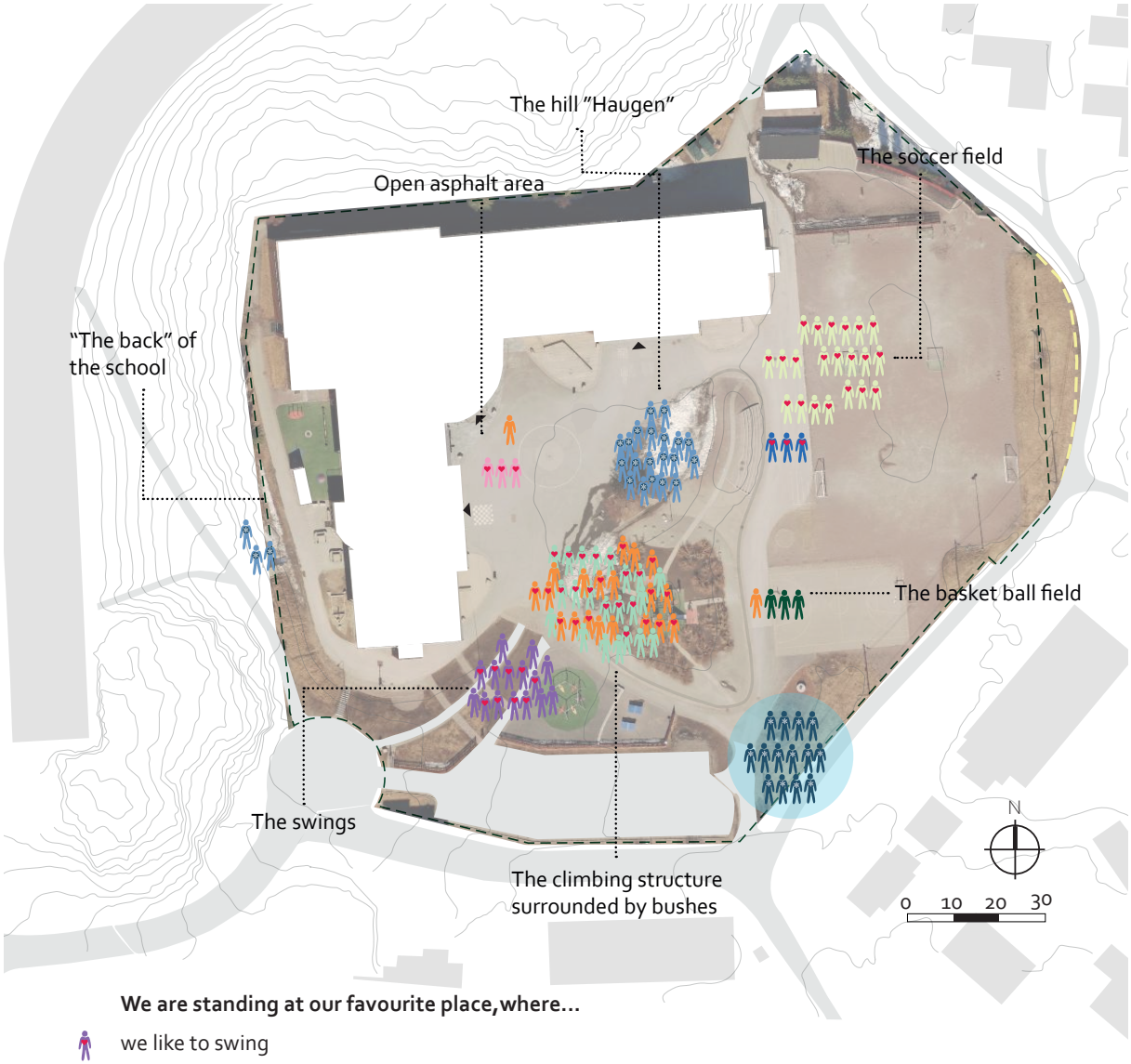
We slide downhill or go sledding
We build and make things from snow; forts, snowballs, igloos, snow man
We do other things like play games, skate if there is ice, play at the playground

What the children like to do in the school yard in summertime - top 3

We swing
We climb
We do gymnastics
We play soccer
We do other things like lie in the sun, talk or be by the ping pong tables.

What the children wish they could do in the school yard - top 3

We want to jump on a trampoline
We want to do gymnastics on a mat
We want to have a water fountain to play in
We want to play iPad
We want to bike
We want to swim in a swimming pool
We do other things like play soccer in a mini pitch, skateboard and have brooms and magic wands



We are standing at our favourite place, where...

- we like to swing
- we like to play group games
- we like to climb
- we like to play OneTouch
- we like to meet new friends
- we like to play soccer

- In winter, our favourite place is the hill"haugen", where we like to play
- In winter, our favourite thing is to play with snow, anywhere in the school yard

We are standing at other places we like, where...

- we like to swing
- we like to play group games
- We like to climb
- We like to play basket ball

Fig. 4.18 The map shows the children's percieved affordances, linked to location.

Figure 4.18 illustrates a summary of the answers from the survey, by showing the top three most common answers for the questions. It is focusing on what they do and is here linked to different locations. The little people with a heart represents the children's *favourite place* in the school yard, and what they *do* there. The children without a mark represents *other places they like*. The children with a snowflake on their chest represent what they like to *do* in wintertime, and *where*.

The children prefer to be by the climbing structure, where they can climb or play different group games. They also like to swing or play soccer. The map also shows that no one picked the basket ball court as their favourite place, and about 25% of the ones that did say that the basket ball court is a good place, choose to play group games there. Out of the soccer players, all mention the soccer field as their favourite place. A group of children come to the soccer field, primarely to make new friends- and this is where they believe they can meet potential friends. The open asphalt area is popular for the those playing OneTouch, but is not engaging many children. Although this is not highlighted in the figure, details show that almost no girls play soccer, OneTouch og use the basket ball court. This means the boys have much more area dedicated to activities they prefer, than the girls.

The figure shows three main areas that are popular and under pressure, but also a lot of un-used space. Even though each child has an average of 20 square meters to play at- the answers from the children as shown on the map, indicate that some children has a lot more and that many children has a lot less space to play at.

Affordances can be distributed more evenly using the available space. More of the popular affordances can be added to the un-used areas. Hence, the school yard needs more opportunities for climbing, possibilities to play group games, to run and catch each other. The school yard also needs more swings. The affordances wished for are to jump on a trampoline, do gymnastics on mats, drink from a water fountain, or play in a water fountain, and to play soccer in a mini pitch[9].

The two places most often mentioned as places the children do not like, is the soccer field and the play area "behind" the school, along the western border.

9 A smaller ball field with fence

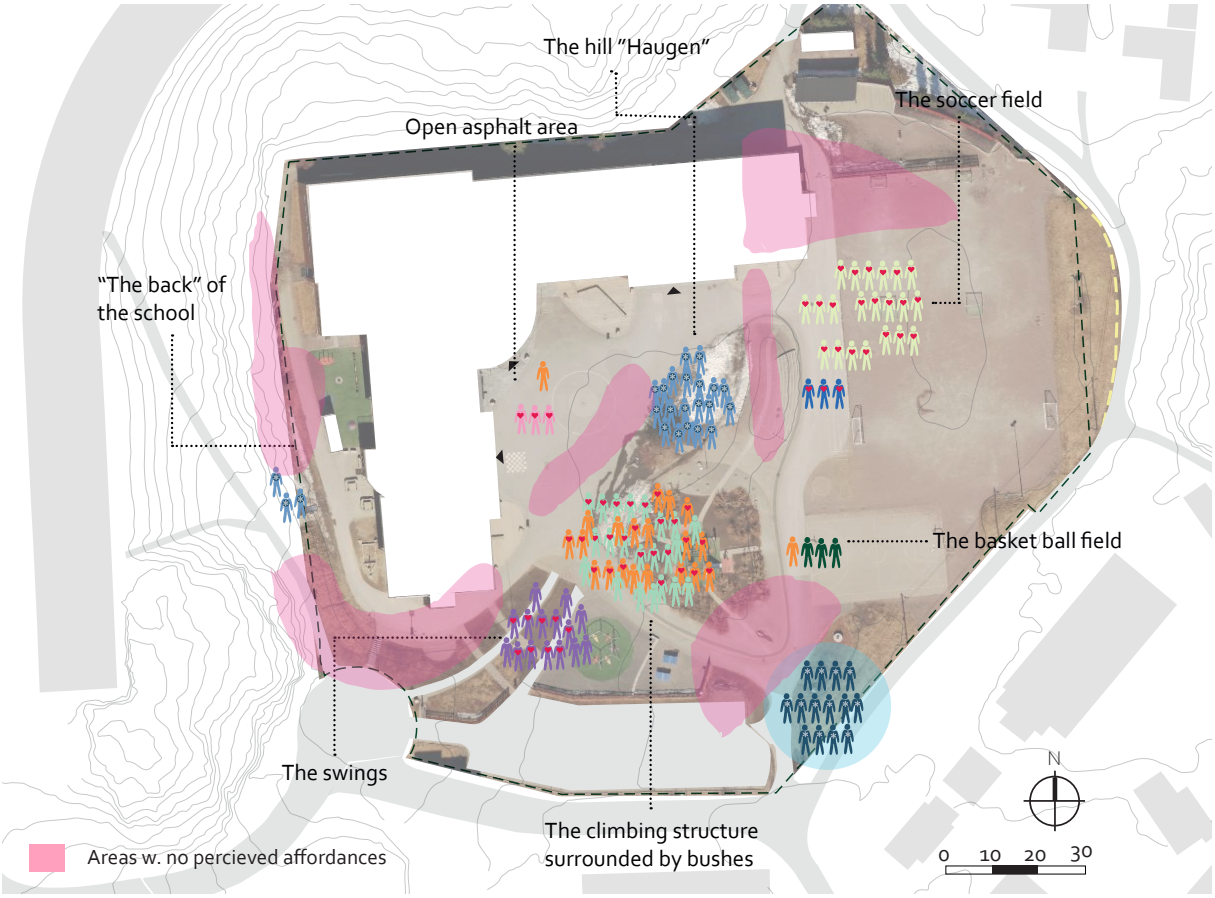


Fig. 4.19 The map shows where children play and where they do *not* play, which is shown in pink colour.

In the analysis it was found that the following areas in the school yard do not provide children with affordances. These are therefore considered areas with potential for further development.

4.4 Children's drawings

This section shortly present a few of the drawings from the drawing competetion at Ammerud Elementary School, that affected and had an impact on the design process.

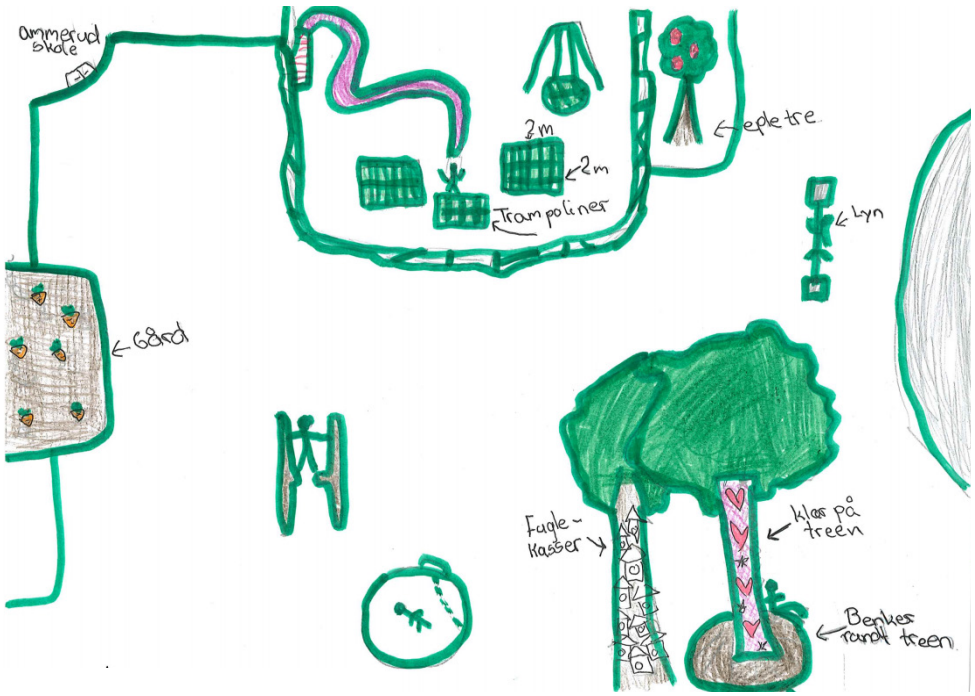


Fig. 4.20

The proposal has a good mix of thing to do and things to explore. The ideas are a little bit outside the box- in a god and fascinating way. It shows that seemingly simple features create well-being and enjoyment and give this place a personal character (the bird houses, the "clothes"/socks on the tree). It portrays an inviting, pleasant, and friendly place!

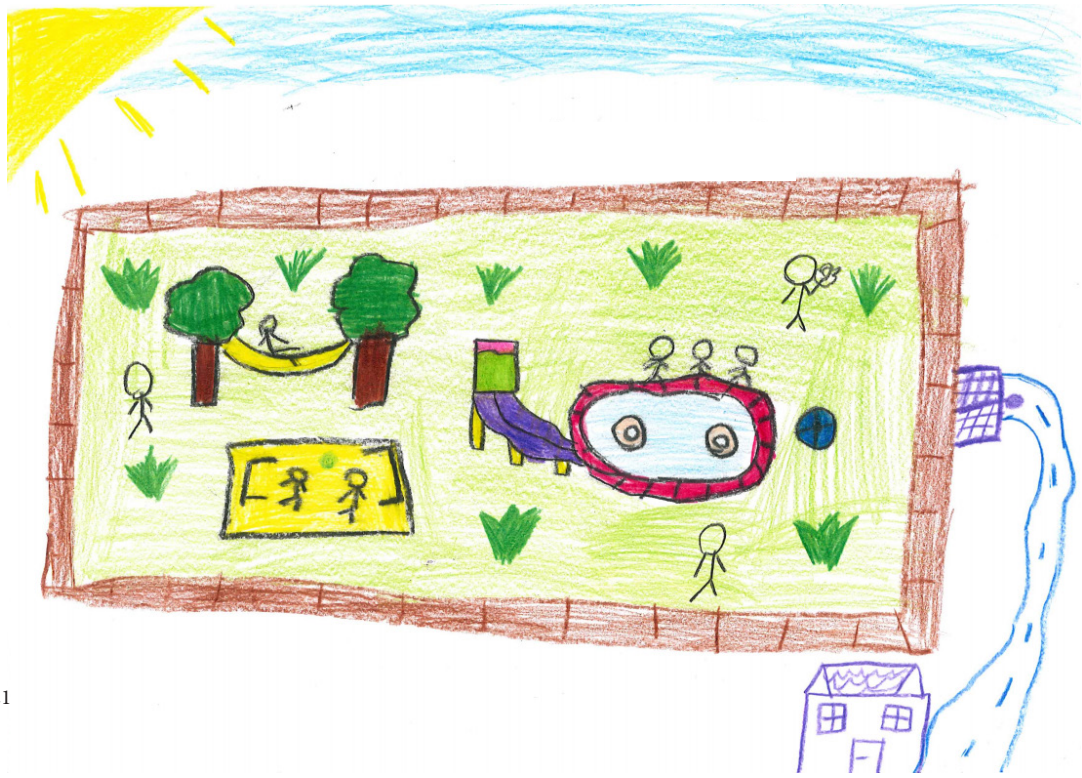


Fig. 4.21

"This school yard, I would like to come visit! It is a complete green oasis. What an unusual and nice idea. In addition to playing soccer, play in the climbing structure or relax in the hammock, I see someone exploring something in the high grass. I wonder what they find there?"

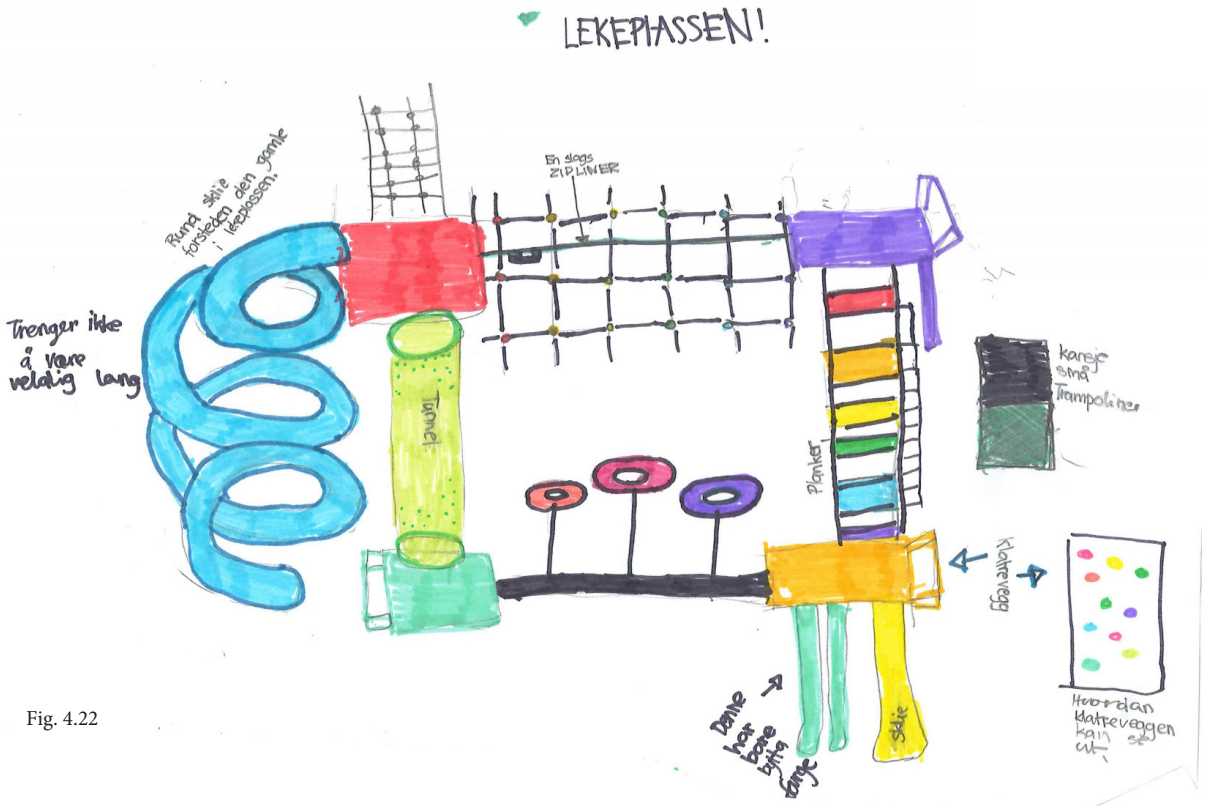


Fig. 4.22

4.5 Implementing the knowledge- how can a school yard be designed based on scientific knowledge on children's needs and children's participation?

The result from the two analyses conducted, will be used as guidance for the design proposal.

When summarizing the found qualities in the school yard as of today it is found that several of the categories could be addressed and resolved. To "fill in the blanks", that is where the school yard scored low, could provide, and give children access to many more qualities than today. The findings from the user group participation study revealed what the children like to do in the school yard and what they wish they could do int heir school yard.

These are the six main interventions to improve quality in the school yard at Ammerud Elementary School, based on the result from the quality assessment and children's participation.

1. Create a spatial design with zones and variation, with the use of vegetation and natural materials.
2. Introduce more vegetation and use more natural materials, which will provide eco system services, possibility to experience the seasons, gives playable vegetation and loose material as well as please parents who accompanies children. It can also be used to create shade from the sun and be a meeting place.
3. Reduce size of sport fields and fill them with other features- for equal and fair distribution of space between children and enable more children to find meaningful activities.
4. Create several meeting places with different types of seating for different types of groups and occations.
5. Make sure that children can continue to do the things they like to do, and find meaning in. Implement more of these features to enable more children to participate: climbing, swinging and play group games. Ensure possibility to play soccer.
6. Add children's wishes.

Through the assessment tool analysis the areas with no, or limited qualities, were identified. In the children's participation study, the areas with no percieved affordances among the children, were mapped. By compiling the findings it is possible to se what areas that are "empty" space- currently not offering the children quality or meaning. These areas will primarely be used for development in the design proposal (fig. 4.23).

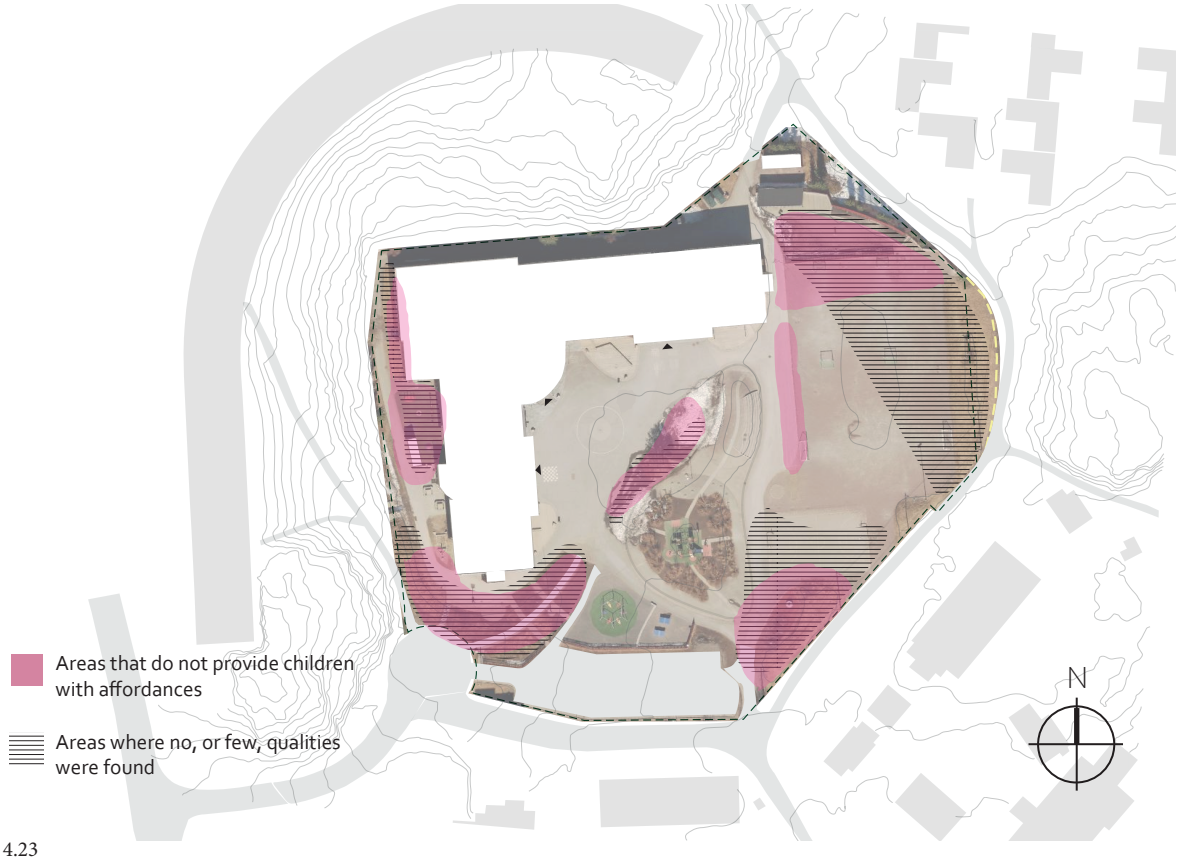


Fig. 4.23

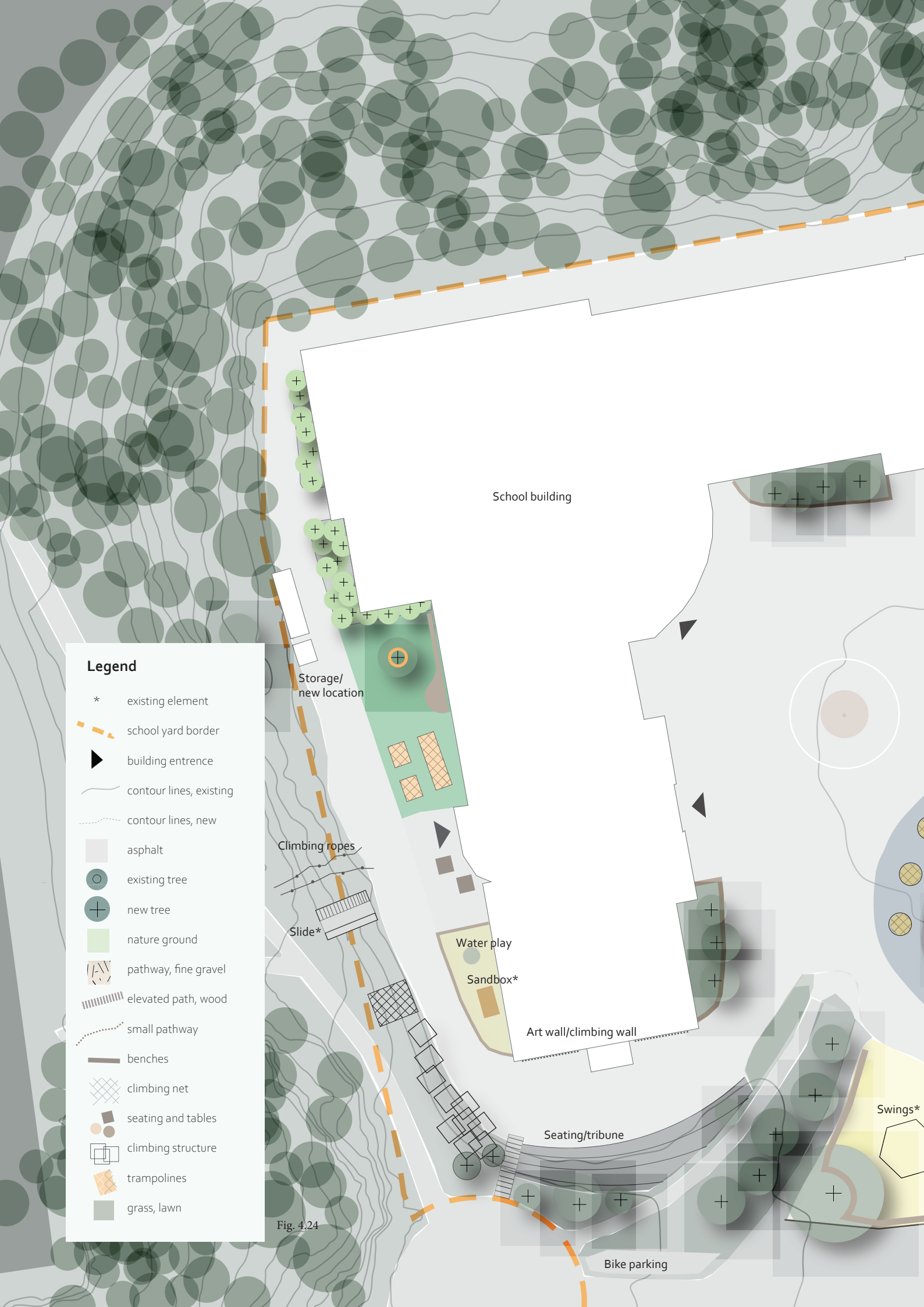

School building
Storage/
new location
Climbing ropes
Slide*
Water play
Sandbox*
Art wall/climbing wall
Seating/tribune
Swings*
Bike parking
Legend
* existing element
school yard border
building entrence
contour lines, existing
contour lines, new
asphalt
existing tree
new tree
nature ground
pathway, fine gravel
elevated path, wood
small pathway
benches
climbing net
seating and tables
climbing structure
trampolines
grass, lawn

Fig. 4.24

Storage
Seating w. tables
"The kitchen garden" w. plant boxes
"Huts" w. fire pit
Insect hotels and bird houses
Statue "the moose"*
Storage and play house
The hill "haugen"*
Storm water management plantings
Soccer field
Storm water management plantings
Boulder
Stairs/tribune*
Drinking fountain
Basket ball court/gymnastics
Boulder
Sitting mountain
Giant swing
Ping pong table
Parking*
Ammerud Elementary School & school yard
Master plan illustration
1:500 (A3)
N
0 5 10 15 20

Fig. 4.25

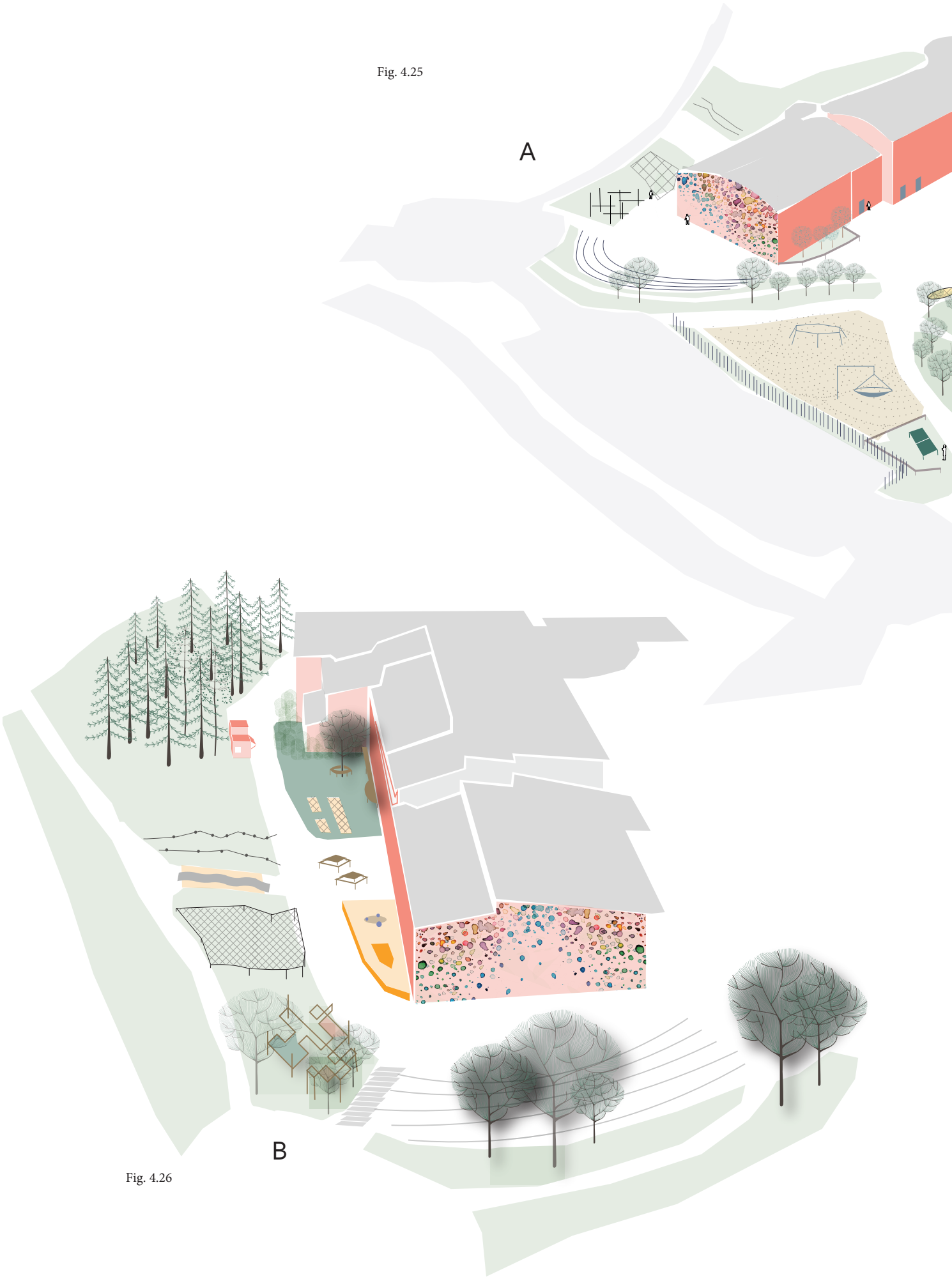
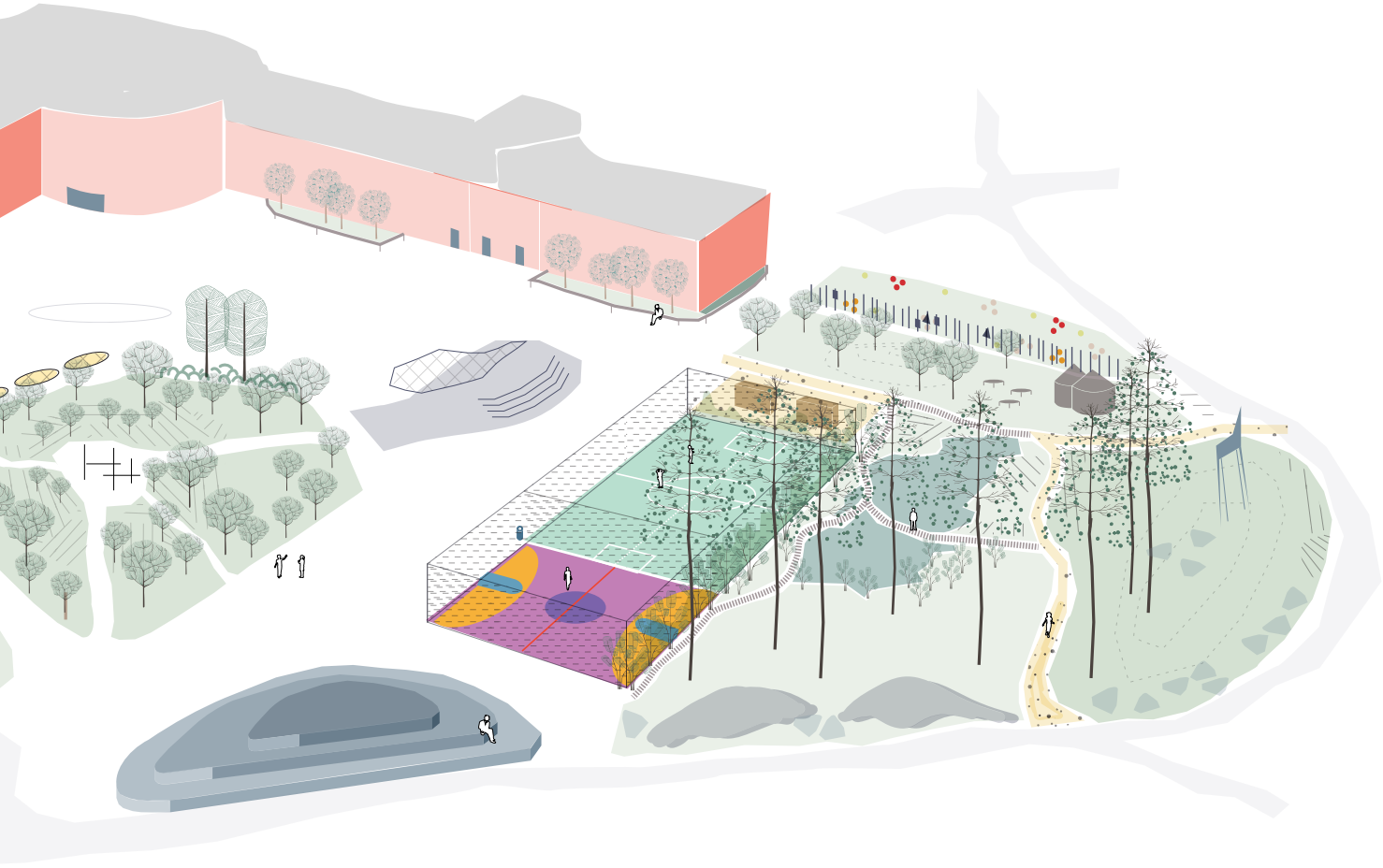


Fig. 4.26



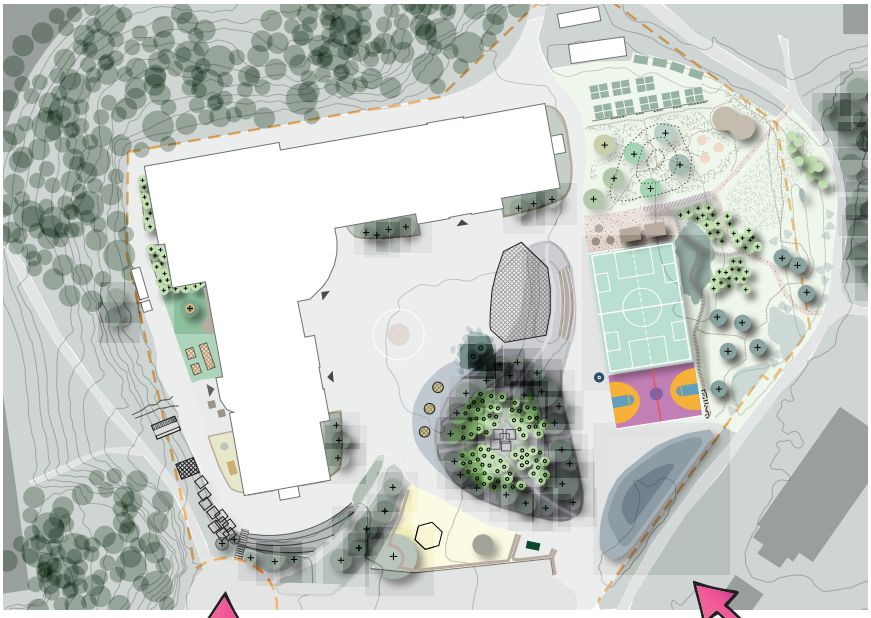
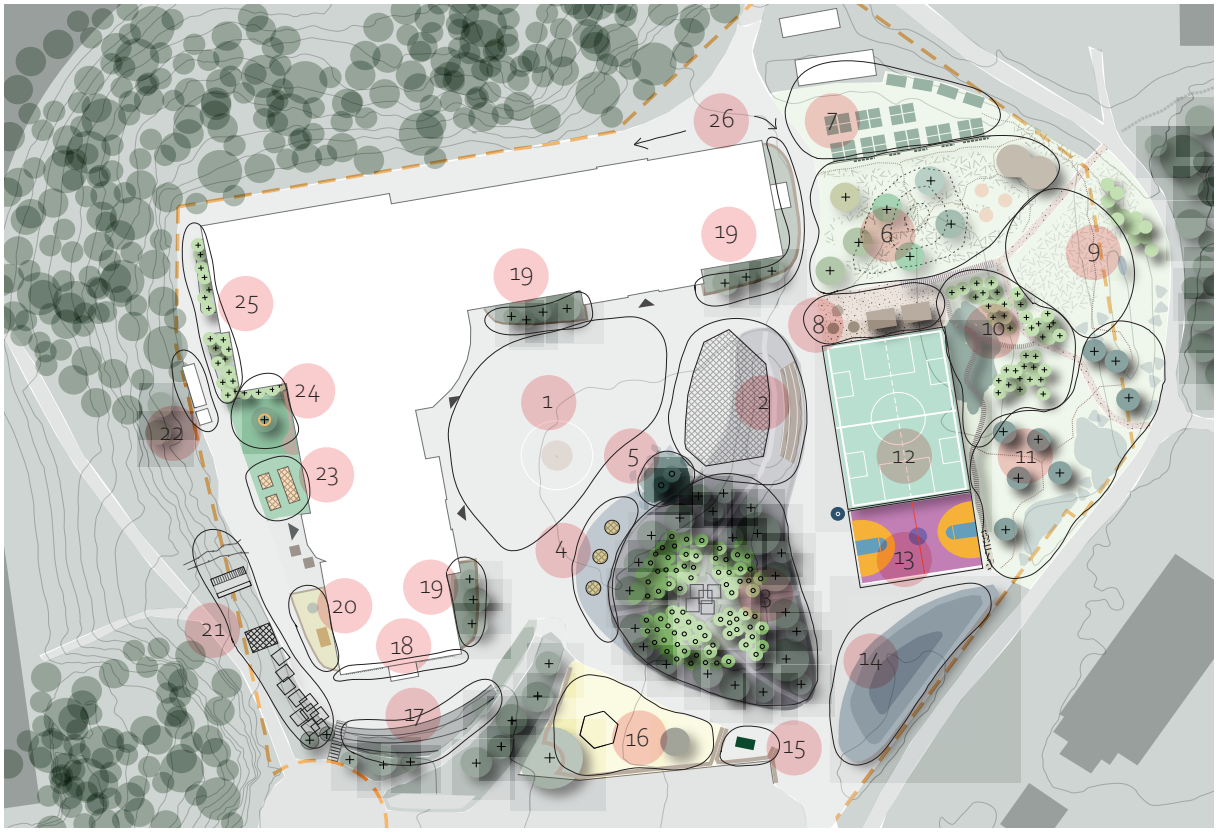


Fig. 4.27



1. Open almost flat, spacious asphalt area.
2. The hill "Haugen", with net for climbing or resting.
3. The climbing structure and surrounding area, with bushes and new trees
4. Trampolines
5. Storm water management
6. The fruit garden, w. seating and fire pit
7. The school kitchen garden
8. Storage room and play house/fruit and berry prep. room
9. The meadows
10. The wild bush area. Storm water management.
11. The pine forest w. large rocks
12. The soccer field w. fence
13. Basket ball court and gymnastics area
14. The big sitting rock
15. Plng pong table and seating
16. Regular swings and giant swing. The ground surface is sand.
17. Tribune, in stone
18. Art wall, combined with wall climbing
19. Seating under trees
20. Sandbox w. water play
21. Activity area w. climbing structure, climbing net and slide
22. Storage and small play house
23. Trampolines
24. Seating are under a tree, large plants around
25. Play bushes
26. Possibility to bike around the school building.

Fig. 4.28

1. **Open, almost flat, spacious asphalt area:** The area is kept as it was originally. It is intended to give possibility to run or jump in different directions, and children use and like this area in the school yard. It is a place for group games or other action-oriented activities. It is approximately 35 x 40 meters and considered a middle-sized room.

2. **The hill "Haugen", with net for climbing or resting/hanging out:** The existing hill, with very steep asphalt slopes are kept as it is, because it is part of the spatial pattern, defining zones in the school yard. It is popular with the children who use it to get a view and to slide down on in winter. Due to reports of "haugen" being closed for safety reasons when it is cold and slippery- it is proposed to use the height difference in a new way. The hill has now got a net, for climbing up to the top or for lying in, hanging out with friends, and observing the ongoing activity in the area.

3. **The climbing structure and surrounding area, with bushes and new trees:** The climbing structure is kept as it is, as well as the bushes around it. This is one of the most popular places in the school yard. The asphalt area going around it, is used to plant climbing trees- not too big, with many branches starting low on the stem. The ground surface is wood chips.

4. **Trampolines:** The children wished for trampolines. These round trampolines are about 2,5 meters in diameter and are places in a blue coloured plastic carpet.

5. **Storm water management:** This is the lowest point in this part of the school yard. The two alder trees already grow there- although the alder tree can handle wet conditions it is proposed to create a more diverse site here, with plants that are resilient to water and draught. The plant field will surround the alder trees to protect them . Rocks, large enough to use for sitting is placed around and in the plant field, allowing for exploration also when, or if, the area is filled with water. This is also thought of as safety measures taken for heavies storms to come.

6. **The fruit garden, with seating and fire pit:** The fruit garden has different kinds of fruit trees and/or berries. The garden has longer grass and paths in between the trees. It has a small hill, to get a better view and to run up or roll down, as well as create spatiality. Along the fence in the back, are bird houses and insect hotels. In the far east end, tables and benches under roof makes it possible to gather a group in all weather conditions. It will work for a class during school hours, or for families or friends in afternoons and weekends. It has the possibility to light a fire/barbecue under safe conditions.

7. **The school kitchen garden:** This area was a bike parking area but has now been transformed into a school kitchen garden. It was not built at the time of this assignment. For the proposed plan, the new design is incorporated in the plan. It has many planting boxes with vegetables, berries, herbs, and flowers.

8. **Storage room and playhouse/fruit and berry preparation room:** The two small houses are meant to store all the things teachers and children and parents might need, to take care of the school kitchen garden and the fruit garden- tools, boxes to collect fruit and vegetables in and more. One of the buildings can also be used for sorting fruit, or- off season, as a playhouse where children can arrange for a pretend café or store.

9. **The meadows:** This area is supposed to be kept open, maintained as a meadow with high, "unmaintained" vegetation of various flowers and other plants. It should be kept an open landscape and from the hill, by the moose statue, there is a view towards the school main entrance.
10. **The wild bush area w. storm water management:** This is the lowest point in this part of the school yard.

Plants that can handle these conditions are planted here, with wooden bridges across. It does not matter if there is water or not, to use these pathways and explore the area. In this part of the school yard, children can hide in unruly bushes and find hiding places or build a den. The fence towards the soccer field is covered in climbing plants and works as a shield to "the world". This area may have additional climbing equipment, like ropes to balance on or a small suspension bridge.

11. **The pine forest w. large rocks:** The pine forest is light and airy, with good sight and overview. It has a lot of loose material and movable parts like pinecones, needles, branches, and sticks. There are two large climbable rocks that marks the outer border of the school yard to the south. There are also smaller rocks, randomly placed within the forest to sit on or jump between.

12. **The soccer field with fence:** The soccer field is 20 x 30 meters, which in Norway is normal for children's soccer game with five players per team[10]. It is also possible to split the field in four, to get the size for a field with three player per team. The soccer field has a light fence where plants can climb on the eastern side. It also has artificial turf.

13. **Basketball court and gymnastics area:** The basketball court is colourful and bright. It has the measurements of a "multi court" suitable for a variety of sports. The intension is that older kids might want to use the whole court in afternoons and in weekends, while younger kids using it during school recess, can split the court in half and that one part will then be used for gymnastics. Gymnastic mats can be brought in, and storage can be arranged close-by.

14. **The big sitting rock:** This sitting rock is for the audience of the basketball game or gymnasts. It is a place to see and be seen. It is made of stone or concrete and has lighting at night.

15. **Ping pong table and seating:** There is one ping pong table situated in the area, and good seating options for the ones waiting for a game or just watching.

16. **Regular swings and giant swing:** The original swings are kept in their place, but the ground material is changed into soft sand. Sand is comfortable to land if when practicing jumping off the swing, and it can be used for building, smearing and more. The children wish for a giant swing and it is also place here in the sand.

17. **Tribune, in stone**: The tribune is a place to gather people for an event or happening. It can also be used for climbing in, or just sit down and talk, relax or watch others.

18. **Art wall, combined with climbing wall:** On the wall facing the tribune, is a large piece of colourful art, covering the whole wall. This was also a wish from the children, to have more colours in the school yard. The wall is also a boulder climbing wall.

19. **Seating on benches, under trees:** Seating options spread out in the school yard.

20. **Sandbox w. water play:** The original sandbox is kept in its location, but it now has a low wooden side border, that can also be used for sitting on. There is also an area for waterplay, with very simple techniques and equipment- water, buckets in different sizes, watering cans and tap with a lock.

10 "5'er-bane" in norwegian

21. **Activity area w. climbing structure, climbing net and slide:** The terrain is very steep in this area, but may be used to place a climbing structure (built on site to fit the location) and a climbing net to climb in or sit and relax in. There is already a slide in the area, and ropes to climb the slope to reach the top of the slide, are added.

22. **Storage and small playhouse:** There is an existing storage room here, but it has now been moved to its new location, to free up space for the children to play at. A playhouse that can be used as a pretend café or small shop is added.

23. **Trampolines:** Jumping on trampolines are an activity the children wish thy could do in their school yard. Moore trampolines have been added here.

24. **Seating are under a tree, large plants around:** A tree has been planted in this corner, to provide a calm place. There is a bench around the stem of the tree, and a bench along the building wall. The plants in this area should be large and wild, like swaying grass and colourful flowers, things to look at, or feel the texture of.

25. **Play bushes:** This field of plants are hidden away in the back, but it can be used to provide hiding places and for children to find their own special place. The bushes should be easy to bend and manipulate.

26. **Possibility to bike around the school building:** It is possible to use the asphalt circuit around the school to practice biking or kick biking.

5. DISCUSSION

The different methods used to answer the research questions will be discussed in relevance to how well they were suited to help answering the research questions. The meaning of the findings, in relation to the theoretical approach as well as in relation to research on the topic, will be addressed. There will also be a discussion about the interpretation and understanding of the findings and possible reasons for questioning the findings.

The chapter will be completed by discussing the main research question "How can landscape architects contribute in the planning process to create school yards based on children's needs and aspirations?"

5.1 How can quality be assessed in a school yard?

The two sources used as foundation for the assessment tool are, as previously mentioned :

- the original tool by Jansson and Andersson (2018) which presents 21 criteria for quality in playgrounds. The tool is based on a literature review, other research, and other methods to assess quality in play environment.

- a report by Thorén et al. (2019) that recommend 13 criteria to establish good quality in schools and pre-schools. The list is based on a literature review, experiences from site inspections in five Norwegian municipalities as well as experiences from other countries. The report also recommends a minimum size of school yards and a minimum area per child (which applies to new schools).

The original tool by Jansson and Andersson (2018) was developed for assessing playgrounds. For this master thesis I wanted to measure quality in school yards, that function also as playgrounds. Although the report by Thorén et al. (2019) already view the school yard as an arena and meeting place for the local community, combining the two sources of knowledge were considered broadening the scope on school yards, to view them as a playground and meeting place outside of school hours. The tool by Jansson and Andersson (2018) and the report by Thorén et al. (2019) do not share any of their sources, yet the lists of criteria for quality in playgrounds and school yards respectively, are surprisingly consistent. This is considered a strength and affirmation of the knowledge within the field.

Merging the two sets of characteristics were unproblematic, since they overall addresses features at the same scale and to a similar degree of detail. When there was a need to split up, or sum up, criteria to create clear categories for the tool, this was done. The goal was to make sure that all the characteristics on both lists, would be represented on the final list, which was then directly used as categories to assess in the tool. This way of combining the lists to cover both playgrounds and school yards worked out according to the plan. However, in retrospect, some of the characteristics are found to belong in more than one category, resulting in criteria overlapping one another. It

can therefore be questioned if the same criteria is evaluated twice. Where characteristics are *almost* the same, this is challenging and might need further concideration and fine adjustments.

The limitations to this method are that there might be a risk that the characteristics on the lists, are understood and interpreted differently than what was intended, and that combining the lists therefore end up slightly misleading. This is associated with interpreting terms and expressions between different languages and mixing taxonomy between different research fields (Lerstrup & Konijnendijk van der Bosch, 2017). This, on the other hand, is in that case a problem within all research but should nevertheless be trivialized.

The level of detail assessed in the tool was perceived as adequate. It is considered an advantage for using this tool, that it is easy to see the "weak" categories and hence quickly identify what type of quality is lacking.

The practical execution of assessing quality in the school yard, using the tool, worked out as intended. When conducting the assessment, the first section called *policies* were mainly assessed by looking into policy documents for the municipality but also trying to find information on a local level. This section is seen as rather complicated to assess since the descriptions in the tool are vague and leave a lot of interpretation and choices to the person doing the assessment. It is a limitation since this theme may assess very different parameters, which may give difficulties when comparing school yards, if this is the intentions for assessment. It is, on the other hand, still considered important as basis for discussion in the planning process. To get a thoroughly and fair evaluation of the categories within the theme *policies*, the person doing the assessment need to invest a lot of time and work. To merely read and check policy documents are doable, but to grasp the whole situation concerning to what extend these documents are actually being used, in general, or for a specific case, and to what degree, is difficult and demanding. Because of its importance, the theme policies are believed to be its own field and will benefit from being treated separately.

In this assignment, the theme *policies* was not investigated in detail, mainly because it is not clear in what way it will benefit quality in this particular school yard. It is instead suggested, on the background of testing the tool in this master thesis, that this is assessed separately by using a suitable method. For example can the method by Thorén et al. (2019), aiming at investigating municipalities' efforts to ensure good outdoor environments for children, be used.

The other categories in the tool was assessed during a site visit. It may be a limitation to do the assessment during winter or early spring when there is no visible vegetation. The school yard appeared very empty and grey during this time of year. This may have affected the result. Still, children use the school yard all year, and affordances need to be present during all seasons. Criteria like "Does the school yard offer safe traffic conditions?" also requires a definition for "safe". There are several questions that will need the person who conducts the evaluation to get engaged in the situation, to discuss with others. To conduct the assessment in field, using the evaluation chart, worked well. To use a chart is considered helpful to systematically control the information collected through the analysis.

To score a quality may be challenging for a few of the categories, mainly because the description of the criteria sometimes includes and describe several features and criteria. This can be confusing and make it difficult to know

what to actually look for. This particular limitation to the original tool is also criticized in a newly presented bachelor thesis (Filipsson, 2020).

The result from the assessment tool, as in the score for each category, is however highly person dependent. This is because the task of evaluating to what degree a feature is present, may be interpreted differently by different persons. In this thesis, a scoring guide was developed, to make it easier and more transparent to grade categories. As discussed earlier, the assessment tool is still rather person-dependent, and the score is hence a result of who is conducting the assessment. Although the scoring guide was found to help in putting a fair and more uniform score, it does not make the method bullet proof. If the assessment tool is to be used to map the current level of quality in a municipality, there might be a need for further details and agreements within the group on how to grade and score a school yard- again, if the purpose is to compare them. The scoring guide that was developed in this master thesis, is thought to make the result from the assessment more valid. Still, this problem highlights the importance of competence of the person carrying out the assessment, often the landscape architect. To get a reliable result when assessing quality in a school yard, specific knowledge in the field is required.

Jansson and Andersson (2018) points out the importance of a balance between general knowledge about quality in children's environments, place specific knowledge and the intuitive knowledge that a landscape architect possesses, and which is a strength within landscape architecture. Tools should therefore not be used to determine or dictate the design, but rather be guiding it.

The reason for conducting an evaluation of a school yard, will also impact the result. It is important to always remember that we are working towards bettering the situation for the children- we are not trying to get a good score on the chart. The chart is merely a way of systematize information and document it. It may help us think, and be aware of what children need in a school yard.

To use scores when assessing a school yard might be problematic. A high total score may not necessarily reflect a school yard where children find meningful action possibilities. This is because the tool measures a lot more than physical attributes in the landscape- as for example the theme *policies*. If a school yard get a full score in *policies* and a full score for geographical context it alerady have a fairly good score. If the school yard scored zero points on all the play area attributes, the school yard may still be concidered "to pass". This may be misinterpreted as a good result. The total score should not be the essential information- the important aspect is to identify which qualities are present and which qualities are missing. The absence of a certain quality can be linked directly to the consequences this might have for children deprived of this potential meaningful activity. In this sense, one quality cannot compensate when other qualities are lacking. Because of this, it is suggested to *not* sum up a total score, and instead view each of the themes separately. This way the different characteristics are weighted against the total score within it's own theme.

The assessment tool, which is based on knowledge from research on quality in playgrounds and school yards, is measuring just that. It means that the tool measure what we research- and will say nothing about the topics we do no not know much about. An example of this may be knowledge from research about spatial design in children's outdoor environments and how it affects children.

5.2 How can children's opinions be recognized and respected when planning a school yard?

When planning the user participation analysis, I was preparing for having an active role where I met and talked to the children. I wanted to interact with them in the school yard, as they were showing me their favourite places there and what they like to do at these places. Due to the sudden covid 19-virus pandemic and months of lock-down and strict rules for social distance, using such a method was no longer an option. The survey method using questionnaires allowed for a larger group of respondents and hence a larger set of data, which may increase validity of the study. While I do believe the replies overall answers to the questions in the quastionnaire, the material is not as rich and detailed as I believe it would have been using child-led walks.

To find a suitable method turned out to be challenging due to closed schools and this affected the process of the work and the findings. Several options were investigated: child-led walks and various digital solutions. The software that was concidered is designed to include children and aim at obtaining their view, but rules and access to use the software stopped this. When access to use digital solutions are too restricted, this is seen as a barrier and a problem which compromises children's chances to be heard. Trying to find a way of using digital solution was time consuming, and it was ultimately decided that the most effective way forward for this project was to hand out paper-based questionnaires.

Handwritten answers by children may possibly impose a risk of mis-readings, misunderstandings or misinterpretations. There were a few examples of this where I had to go back and re-read the answers several times. The majority of these answers I ultimately understood and could read, after de-coding a few letters, but one or two was left mysterious and unsolved.

The girls' answeres were more thoroughly and detailed than the boys, which results in a more complete analysis of what the girls perceive as affordances in the school yard. This indicates that it is worth considering other or complimentary methods when involving children, to better balance this gender difference and capture all children's views.

Mapping children's perceived affordances in their familiar environment has been done successfully before (Kyttä et al., 2018). Garau and Annunziata (2019) argue that the concept of affordances is central in understanding and describing children's activities and it is concluded that this approach is useful in the planning process to identify meaningful and useful places for children. The result from the survey with participating children at Ammerud Elementary School similarly showed that the answers obtained with this approach can give data that may not be possible to get with methods of other theoretical origins. An example of this is that, when a place is mentioned as a favourite place in the school yard, it does not always mean that the children automatically do what is intended or expected to do in this place. There are several examples of children saying that they like a place but do something unforeseen there. One child said that his/her group of friends like to go to the soccer field after it rains to build canals in the gravel. In this situation, the soccer field is a place that the child like, because it has gravel. It is the gravel that afford canal building, becuse gravel is possible to manipulate, mould, dig and construct things with. This is considered a strength with using the concept of affordances as an approach- it may allow for us to

understand why children find meaning in a place.

The findings suggest that the children found affordances mainly at the same places in the school yard, and these places often afforded more than one thing. The places are regarded as valuable, as they clearly provide affordances for many individual children and hence can be considered sustainable and resilient. Places that attract and invite more children to participate in activities that they find meaningful is desired, compared to places that will only attract a few children at a certain age or level of competence. To identify and acknowledge the characteristics of the places rich in perceived affordances and preserve and enhance them, have been considered vital in the further development of the school yard. All of these places are busy and overcrowded as of today. By using the knowledge derived from the participation study, that revealed what the children's like to do, more features that support and afford these activites has been implement in the design poroposal. Finally, information about what the children wish they could do in the school yard was obtained, e.g. what affordances the children perceive as lacking as of today. These activities were also implemented in the design proposal.

Ideally, teachers, staff at AKS, the janitor or other personnel involved in maintenance, parents and neighbours should have been asked, especially since the school yard will function as a community meeting place as well. Conducting a user-group participation study with members of community would have given a valuable view on the needs for this group. Due to the limitations and time frame of this master thesis, this has not been possible. For this project the children has been in focus, since they are the primary users of the school yard. They wil here represent the community.

Complimentary analyses could have added useful information. Cosco, Moore, and Islam (2010) uses observations with an affordance approach, which could have benefitted the analysis at Ammerud Elementary School. Again, the limitations and time frame for this master thesis demanded to make choices for methods since it was not possible to do them all. Between observations and a survey, the latter was chosen because I wanted a form of communication- although I just got one chance of asking the questions and they answered, it provided data with feelings, thoughts, nuances, aspirations, likes and dislikes about their school yard.

Children the age of 10, who are in 4th grade, was concidered an appropriate age for this type of method. Some children answered the questions with ease, writing rather long and detailed answers while some seemed to struggle a little bit with the writing. Overall, all answers were providing useful information.

Where on Hart's children's ladder of participation, did the study reach? Unfortunately, the strategy for this study had to adapt to rules determined by the covid-19 virus disease control. Due to closed schools the opportunity of more follow-up interaction with the children, was not possible. By critically viewing the children's participation as it eventually turned out, it can be seen that the children were informed about the questionnaire, why they were invited and by whom, they were asked to participate, and some of their opinions have been implemented in the new design of their school yard. Based on this, the study is considered placing itself on rung number four. Although this is a little disappointing, it is an eye opener to how the process of participation needs careful planning to be productive and honest. Hart (2008) want the ladder to highlight the need for concern and a transperant discussion of children's participation. In the user participation study conducted in this master thesis, the ladder works well to demonstrate what was achieved and what was the shortcomings.

The marks in figure 5.1 shows that I consider the user group participation conducted in this assignment to cover the criteria for rung number four. The criteria are: *Adults decide on the project and children volunteer for it. The children understand the project and know who decided they should be involved and why. Adults respect their view.*

Under normal conditions, where people can meet and interact more freely, the design proposal would have been presented to the children who would have the opportunity to express their views and opinions. Discussing the design and if it gives meaning to them is important. As a result of these discussions, adjustments could have been done to suit their aspirations in the best possible way. These measures would have taken the study up to rung five. Rung number six is possible to reach as well but require a lot of time and engagement from the landscape architect conducting the study, the participating children, teachers, school principle and possibly others.

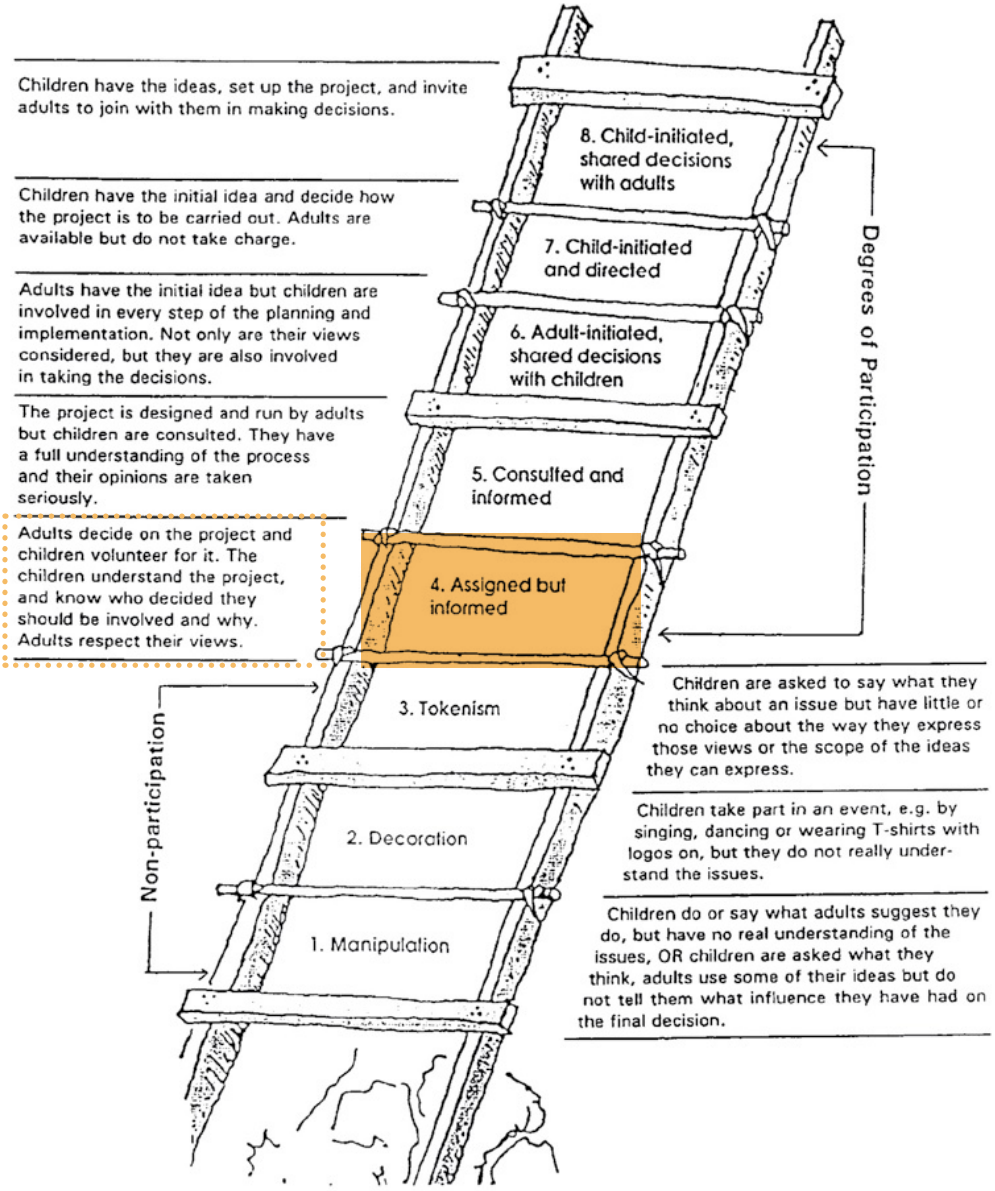


Fig. 5.1

The user group participation study provided unique knowledge regarding the users and the place, that could not have been retrieved in other ways. Reading the children's response gave insight to the place and its attributes that I, as an adult could not see. This is in line with the arguments by Bishop (2017) and Kylin and Lieberg (2001) who highlights the fact that children experience place differently that adults. Bishop (2017) also argue that children are competent and capable of contributing, which was undoubtable the experience in this study. The knowledge from the user-group participation provided new information and so complemented the other studies.

5.3 Children's drawings

Using the drawings, although not originally planned as a method for this project, was interesting and valuable and influenced the result. The details in the drawings were often illustrating specific problems, or things lacking, that is difficult to spot if one is just visiting. In the drawing competition children were asked to draw their "dream school yard", with no further instructions. This gave a wide open opportunity for the children to address any topic they could think of. It resulted in a range of ideas reaching from fairy tale castles in the school yard, to a "friend rock" where anyone wanting to play could go and when the others see someone by the rock, they can invite the child to come play. The details were overall very specific to the site and highlighted several issues, as well as suggestions for how to solve these.

5.4 How can a school yard be designed based on scientific knowledge on children's needs, and knowledge from participation with children?

The design is based on the findings from the two analyses conducted in the school yard: the analysis using the quality assessment tool and the children's participation survey. Through meetings with the project group for the school it has been clear that the budget will not allow a large scale re-modeling of the school yard The play equipment in the school yard today, needs to stay. This is taken into consideration when working with a new design. The task was to work with the existing situation, and see this as the landscape to build in.

The school yard need a more distinct and visibe spatial design with zones and variation, including more variation in topography and terrain. The design proposed in section 4.4 are focusing on creating more spatiality by introducing elements that create "rooms" within the school yard. Such elements are vegetation, like planting of threes, landscape forms like small hills, large natural rock, and built structures like the sitting mountain. The fence around the sport area also add to the spatial pattern. It has been a focus on providing middle sized zones, with a difference in character, like a light and airy atmosphere in the pine forest and a more dense, bushy feeling in the neighbouring area. While some areas are intended to give a feeling of planned maintenance, like the fruit garden and school kitchen garden, others are intended to give a feeling of being non-maintained, wild, un-organized and free from adults interference- like the bushy area behind the sport field and to some extend the meadow in the very back (a place far away).

Along the western border, the intension is to rearrange storage to free up space for children to use for play. The space is very narrow and this makes it challenging to create more spatiality. Instead there has been a stronger focus on zones. A calm zone is proposed by the large tree in the corner, intended to be safe and comforting, and with possibility to observe the rest of the area.

There has been an overall aim at introducing more vegetation, to provide possibilities for affordances that are flexible and appealing to different ages and all genders. Vegetation can also provide various types of loose materials that can be used to collect, construct and manipulate in different ways. Also, vegetation provide possibilities to understand the world and eco systems, including flowers, insects, birds, water, drought and the seasons. It is also environmentally friendly, and safe for children as they do not contain toxic materials. The size of the sport field has been reduced, to provide a more equal and fair distribution of space between children. This makes more space available for more children, not only the children interested in sports. There is a need for meeting places in the school yard and it has therefore been added several places with different types of seating and design, to provide possibilities for different types of socialisation. Seating and meeting areas spread in the school yard. There are benches placed close to the school building and there is a tribune for larger groups and for performances. There is also places to meet and socialize in the fruit garden, including tables and the possibility to use a fire pit. There are two climbing nets in the school yard, both which can be used for sitting or lying in, as well. There are also seating options for them who needs to withdraw. There are also seating opportunities by the ping pong tables and by the swing and a tribune for audience by the soccer field and a sitting mountain for audience by the basketball court.

More features that enable more children to do things they like, such as climbing, swinging and play group games, have been implemented. This can be done in the asphalt area like before, but also in the pine forest or the meadow, depending on the game. Since soccer is a popular activity, it has been a focus on ensuring the possibility to play soccer, and improve the field. As for children's wishes, the features that have been implemented are a giant swing, trampolines, soccer field with artificial turf, basketball court with sports mat, a gymnastics area, and a drinking fountain. The aim is to provide as many affordances as possible for the children using the school yard.

Affordances of outdoor settings for children are investigated in a study by Lerstrup and Konijnendijk van der Bosch (2017). They address the non-consistent taxonomy used when discussing affordances in children's outdoor environments. Based on Gibson's and Heft's previous work, the authors presents a revised list of affordances that describes the 10 vital classes of outdoor features, linked to key activities. I have chosen to use these classes to discuss the design proposal in relation to affordances.

Table 2. Activities and classes of outdoor features.

Affording features (Gibson, 1979)	Functional classes of outdoor features (Heft, 1988)	Activities[a] (Heft, 1988) and (Authors)	Classes of outdoor features (Authors)	Key activities[b] (Authors)
Places (Immobile)	Flat, relatively smooth surface	Walking, running, cycling, (skating, skateboarding), *driving, playing ball, song games, games in bigger groups*	Open ground	Run, drive, walk
	Relatively smooth slope	(Coasting down), rolling/sliding/running down, rolling objects down, *jumping down, climbing up; for ditches: jumping over, building over, hiding in, sitting in*	Sloping terrain	Roll, slide, clamber
	Shelter	Microclimate, prospect/refuge, privacy, *hiding in, lying in, sitting in*	Shielded places	Hide, as frame
	Aperture	Locomoting from one place to another, looking and listening to adjacent places		
Attached Objects, (Immobile, countable)	Attached object	Sitting-on, jumping-on/over/down-from, *running around, hiding behind, building on*	Rigid fixtures	Climb, balance, jump
	Climbable object	Exercise/mastery, looking out from, passing from one place to another, *lying-on, climbing, balancing-on, hanging by arms, hanging in legs*		
	Non-rigid attached object	Swinging-on, *swaying-in, seesawing-on, looking out from, spinning, sitting in, lying on, springy jumping*	Moving fixtures	Swing, sway, seesaw, spin
Detached Objects (Movable, countable)	Graspable/ detached object	Drawing, scratching, throwing, hammering, batting, (spearing, skewering), digging, cutting, tearing, crumbling, squashing, building of structures, *picking, gathering, sorting, arranging, making patterns, as accessories, as tools, throwing, sawing, carving, bending, breaking, thatching, crushing, hacking, tasting, eating, kicking in, walking on foot extensions*	Loose objects	Arrange, modify, as tools, props, treasures
Substances (Movable, not countable)	Mouldable material	Construction of objects, pouring, modification of its surface features, *moving around, moulding, smearing, kneading, smashing, digging-in, raking, sifting, kicking in, gliding in*	Loose material	Dig, move, mould, smear
	Water	Splashing, pouring, floating objects, (swimming, diving, boating), fishing, mixing with other materials to modify their consistency, *gathering, throwing into, jumping in, floating with the stream, building of dams*	Water	Pour, mix, splash, float
Events (Changes)		*Following, catching, caring for*	Creatures	Look for, handle, care
		Feeding, poking with sticks, sitting by, follow cooking, drawing with charcoal, putting out	Fire	Feed, look after, sit by

[a]Regular font: Heft and authors. In brackets: Heft only. Italics: Authors only.
[b]Key activities = distinctive and attractive activities for each class.

Fig. 5.2 Table by Lerstrup and Konijnendijk van der Bosch (2017)

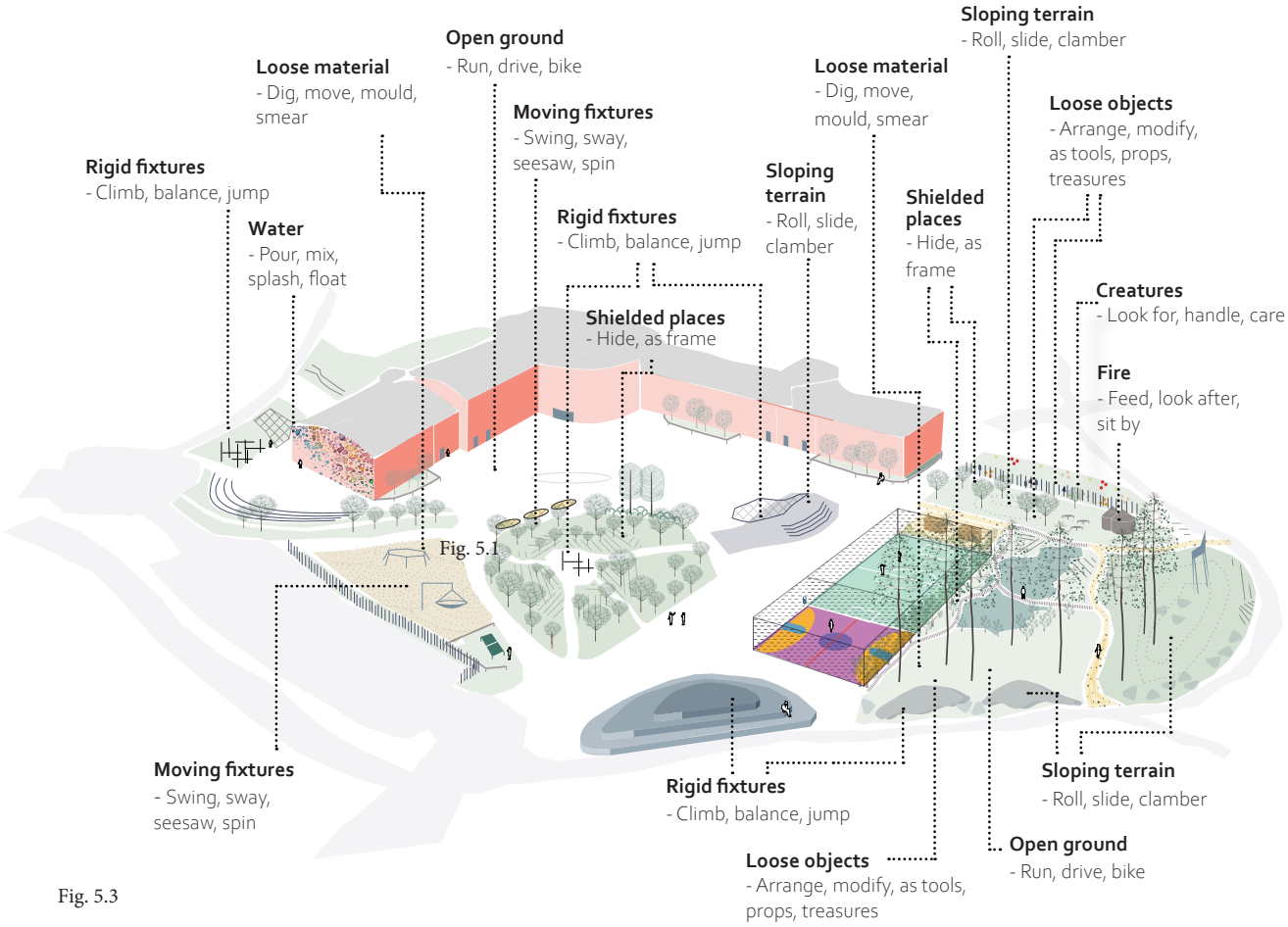


Fig. 5.1

Fig. 5.3

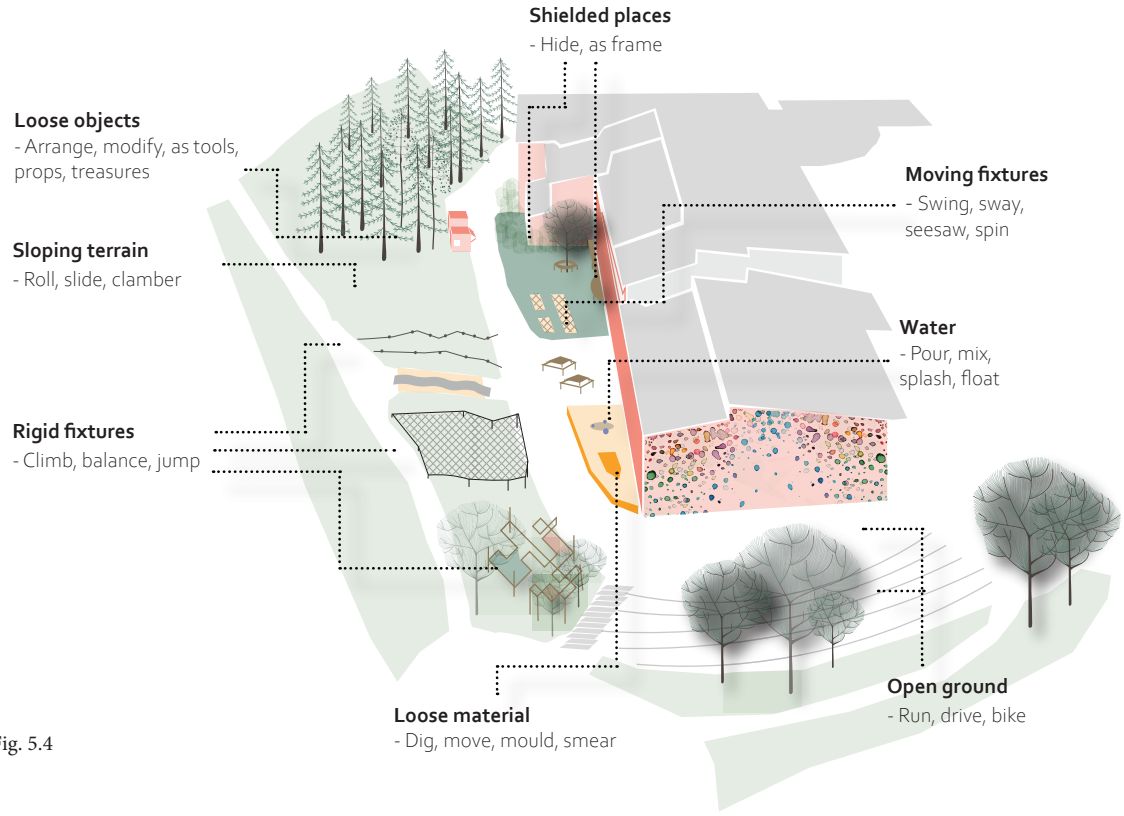


Fig. 5.4

By comparing the design proposal based on knowledge from research on quality in school yards and knowledge from the user group participation study with children, it was found that the new plan resulted in a school yard containing features in all ten classes as presented by Lerstrup and Konijnendijk van der Bosch (2017).

When discussing affordances for children in a place, it is important to acknowledge that we cannot be sure about what affordances that will be perceived, since we do not know what the children find meaning in. They are the only ones that know and can identify their meaningful action possibilities. That is why we, the adults, who kindly and with the best of intentions want to design their places, need to ask children and invite them into the planning process.

5.5 How can landscape architects contribute in the planning process to create school yards based on children's needs and aspirations?

In this master thesis, a process to bridge the gap between research and practice, was tested. The aim was to find out if this process was a way for landscape architects to contribute in the planning process of school yards, to give children a play environment that was beneficial for their health and well-being. The design proposal presented in chapter 4.5 includes features that the children need as well as features that they want and desire. In this sense it can be argued for, that the knowledge gap was bridged- the knowledge was transferred from research into the design. By comparing the proposed design to the list of affordances (fig. 5.2), as seen in figures 5.3 and 5.4, the process and use of the methods in this assignment, can be viewed as successful. The new design includes all the ten classes of outdoor features, seen as important in children's outdoor environments from an affordance perspective.

The possibility to improve the school yard by using the process tested here, only applies under the circumstances that the gathered knowledge is used. To undertake analyses and not use the knowledge for improving quality in the school yard is, subsequently, worthless. For knowledge collected through children's participations it is also unethical not to use the knowledge, since involving the children implies that their voices are going to be heard. Paget (2008) found that landscape architects do not always know how to use the knowledge gained through user participation. If they are under pressure and stress, landscape architects tends to return to ways of working that they know well, like what they learned at university or in their early years of working. Unfortunately, this leads to less representation from children in the design of their places.

The way landscape architects can contribute is therefore to engage in the process by taking initiative, decide on the method to be used and take responsibility of the transfer of the obtained knowledge- both to be communicated to other actors, but also communicated in the design. To succesfullt contribute in the planning process, is is neccessary that landscape architects arrange to get the knowledge she or he needs, whether this is based on affordances or has another approach. A knowledge transfer gap will likely not be bridged if the landscape architect does not use their role to determine the process. Subsequently, by using methods based on knowledge from research, the transfer of research-based knowledge can happen.

The role of the landscape architect is further discussed by Lindholm (1995), who found that there is an uncertainty regarding who landscape architects think they are working for. Through her research, Lindholm found that landscape architects often viewed themselves as an extension of society or the adult world, which led to a passive acceptance of "how things are", and so continuing the trend of building play environment for children that are out of tune with what they need and want.

Society need to make a shift, towards inviting children to be part of creating and giving form to their own places (Lindholm, 1995; Paget, 2008). The process shown in this master thesis can therefore also be a way for landscape architects to define their role and be part of the shift.

If the role of landscape architects are unclear both to landscape architects themselves and to others, as stated both by both Lindholm (1995) and Paget (2008), it may be necessary to do further research on how to define this role. If a clearer understanding of the role of the landscape architect can help bridge the gap between research and practice, this is important for the users of the places that are to be created, especially for children.

6. CONCLUSION

To use the concept of affordances as a base, was found useful and appropriate for planning and designing for children, both in assessing quality in a place and for investigating children's view of their school yard. Both methods; the assessment tool as well as the user-group participation study brought unique knowledge and contributed to the result, indicating that both were needed.

The scoring guide made it easier to score the different characters and gives the assessment transparency, meaning the assessment is less person-dependent. Someone else can do the work, using the method and get a similar result. The addition of the grading guide is considered to strengthen the tool. Further, it was concluded that the theme policies need its own assessment, and that the total score may be misleading in measuring quality in a school yard. If the tool were to be used again, these adjustments would be done (the new version can be found in appendix 1).

It is also concluded that assessment and analyses are still made with adult eyes. Although this makes it even more important to ask the children, we need to be sure not to interpret their answers with our adult take on the world. Could children participate in the assessment? If the assessment tool were formulated in a way so that it could be filled out by children, this might have been useful and interesting.

The proposed design is to be understood as a result of combining knowledge from research, knowledge from participating children as well as the knowledge of the landscape architect. The experience from this project is that the process explained in this master thesis can help guide the design and be a way for landscape architects to contribute in the planning process and so promoting better quality in school yards. For this to happen, landscape architects need to have a clear definition of their role in the planning process.

7. REFLECTIONS

Around midway through the writing of this master thesis, the school arranged an idea- and illustration contest where the children were asked to draw their "dream school yard". The children's drawings affected and influenced me greatly. Although I had already planned my own user participation study, going through the drawings and the children's comments affected me and the way I proceeded on in the project. I realized that I had been working, using my adult vision and ideas of what a good school yard is. That is merely our adult image of a great place for children- but that is not necessarily true for the children. When I saw their drawings, I was convinced of the need and importance of involving children in the planning process when designing places, they are to use. When I later collected the data material from the survey, this notion was reinforced. Children found new meaning to places, that I could not see. That experience, I will bring with me and use in the future.

The process I tested in this master thesis was interesting and educative. Based on Paget's research, this process and these methods will be what I return to when stressed and under pressure. I hope it can help me, help children to have places better suited to their needs and aspirations.

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Appendix

1. Updated version of the School yard evaluation tool, including criteria and chart.

2. Approval from NSD to conduct the user-group participation study with children.

3. Detailed lists with data from the user-group participation study.

FIGURES

Fig.no	Description	Date	Source
1.1	Definition of school yard		Author's own illustration
1.2	Structure of the master thesis		Author's own illustration
2.1	Hart's Ladder of Participation		Hart's Ladder of Participation (1992) in *The right to Play and Children's Participation* by Roger Hart, in the Article 31 Action Pack by PLAY – TRAIN, 1995.
3.1	Synthesis of quality criteria		Author's own illustration
3.2	School yard quality evaluation-criteria		Author's product, developed from Jansson & Andersson (2018). Author's own illustration
3.3	School yard quality evaluation chart		Author's product, developed from Jansson & Andersson (2018).
3.4	Children's participation questionnaire		Author's product. Map: https://www.norgeskart.no/
4.1	Map of Oslo area		Map: https://kilden.nibio.no/
4.2	Map of Ammerud and neighboring areas		Map: https://kilden.nibio.no/
4.3	Photo of Ammerud Elementary School	20.02.2020	Map: Google Earth Pro/Ammerud skole
4.4	Photo of Ammerud Elementary School	20.02.2020	Map: Google Earth Pro/Ammerud skole
4.5	Photo of Ammerud Elementary School	05.06.2020	Map: Google Earth Pro/Ammerud skole
4.6	Photo of Ammerud Elementary School	20.01.2020	Author's photo
4.7	Photo of Ammerud Elementary School	05.03.2020	https://commons.wikimedia.org/wiki/File:-School_and_blocks_in_Ammerud.jpg
4.8	School yard content		Author's own work. Map: https://www.norgeskart.no/
4.9	Photos of Ammerud Elementary School yard	spring 2020	Author's own photos
4.10	The school yard and surroundings		Map: https://www.norgeskart.no/
4.11	Quality in the school yard		Author's own work. Map: https://www.norgeskart.no/
4.12	School yard quality evaluation- critera and answers (front page)		
4.13	School yard quality evaluation- critera and answers (back page)		
4.14	School yard quality evaluation chart- filled out		
4.15	Summary of the results from the evaluation chart.		
4.16	"Empty" areas in the school yard		Author's own illustration. Map: https://www.norgeskart.no/
4.17	Results from children's participation		
4.18	Children's percieved affordances in the school yard		Tables are author's own illustrations Author's own illustration. Map: https://www.norgeskart.no/
4.19	Areas that are not used by children		Author's own illustration. Map: https://www.norgeskart.no/
4.20	Child drawing- "My dream school yard"		
4.21	Child drawing- "My dream school yard"		
4.22	Child drawing- "My dream school yard"		
4.23	Synthesis of unused and "empty" areas		Author's own illustration. Map: https://www.norgeskart.no/

Fig.no	Description	Date	Source
4.24	Master plan/Schematic design		Author's own illustration. Map: FKB-data & Matrikkeldata i UTM32 Euref89 og er lastet ned fra Norgedigitalt/Geonorge, juni 2017. Laget av Geovekst.
4.25	Design proposal for the school yard		Author's own illustration
4.26	Design proposal for the school yard		Author's own illustration
4.27	Orientation for illustrations		
4.28	Description of the content in the design proposal		Author's own illustration
5.1	Level of participation		see figure 2.1
5.2	Classes of outdoor features		Lerstrup and Konijnendijk van der Bosch (2017)
5.3	Classes of outdoor features in the new plan		Author's own illustration
5.4	Classes of outdoor features in the new plan		Author's own illustration

SCHOOL YARD QUALITY EVALUATION CHART

GUIDELINES FOR SCORES:

0,25 p. - The characteristic for this criterion is present, but only by one example in the school yard.

0,5 p. - The characteristic for this criterion is represented by more than one example in the school yard.

0,75 p. - The characteristic for this criterion is represented at more than a few locations in the school yard, and in different areas/zones and settings.

1,0 p. - The characteristic for this criterion is is represented in various ways and there is a clear and conscious plan for this quality/function in the school yard.

GEOGRAPHICAL CONTEXT

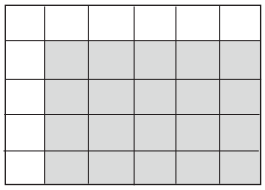
Place specific characteristics

Access and proximity (0–1p)	⊕	
Location and sourrounding (0–1p)	⊕	
Childrens possibilities for, and ability to have, their own places (0–1p)	⊕	
Location of building on the premises (0–1p)	⊕	

SIZE

Enough space

Size of the school yard (0–1p)	⊕	
Area per child (0–1p)	⊕	



PLAY AREA ATTRIBUTES

Characteristics

Spaciousness (0–1p)	⊕	
Zones (0–1p)	⊕	
Spatiality (0–1p)	⊕	
Variation (0–1p)	⊕	

Inclusion & sociability

Using place–unique features (0–1p)	⊕	
Availability (0–1p)	⊕	
Meeting place (0–1p)	⊕	
Storage (0–1p)	⊕	

Possibility for understanding the environment & larger context

Time and change (0–1p)	⊕	
Eco system services (0–1p)	⊕	
Natural material (0–1p)	⊕	

Place qualities and adaptive capacity

Varied tophography and continuing vegetation (0–1p)	⊕	
Playable vegetation (0–1p)	⊕	
Loose material (0–1p)	⊕	
Sun and shade (0–1p)	⊕	

ENABLING FACTORS

Enabling & promoting visits

Adult affordances (0–1p)	⊕	

NAME OF SCHOOL:

SIZE in m2:

GEOGRAPHICAL CONTEXT (max 4p):
SIZE (max 2p):
PLAY AREA ATTRIBUTES (max 15p):
ENABLING FACTORS (max 1p):

COMMENTS

DATE AND SIGNATURE

GEOGRAPHICAL CONTEXT

SIZE

PLAY AREA ATTRIBUTES

ENABLING FACTORS

(front page)

NOTES/DRAWINGS

GEOGRAPHICAL CONTEXT

Place specific characteristics

Access and proximity (0-1p): Does the school yard offer safe traffic conditions in a radius of 200 meters? Is there access to other play areas nearby- 300 meters to a green area or playground? Is there a well-developed net way of pedestrian walkways and bike paths that promotes safe mobility for children, youth and adults in the neighbourhood? Is there sufficient public transportation and access to the school premises by pedestrian walkways or bike paths? Where access is good- has parking lots been reduced to free space for play?

Location and sourroundings (0-1p): Is the school yard located according to the following?

- Limited exposure to pollution or disturbing noise
- No passage or way through the school yard
- Located near a green area with natural elements offering a variety of play opportunities
- In proximity to where many people live, to pre-schools or recreation, culture, service etc.

Location of building on the premises (0-1p): Is the "footprint" of the school buildings reduced as much as possible? Is the building placed so that as much as possible of the premises can be used for play?

Childrens possibilities for, and ability to have, their own places (0-1p): Do children have access to nature or other play friendly places close by where they can go themselves and that they can affect and manipulate? Are chilren given the opportunity to create their own places, through playable vegetation and loose materials: dens or play-houses in the bushes, dens or play-houses from loose material, tree-top play-houses, etc.?

SIZE

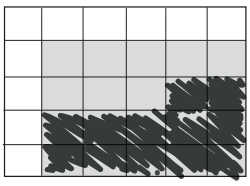
Enough space

Size of the school yard (0-1p): Do the size of the school yard corresponds to the number of children attending the school according to the following guidelines:

- For schools < 99 children, the smallest combined play area is minimum 3000 square meters.
- For schools with 100-499 children, each child has 30 square meters.
- For schools with more than 500 children, an extra 15 square meters/child applies to the area norm.

Area per child (0-1p): Do the school yard offer 30 square meters to play at, per child attending the school? (The critical limit for school yards is 20 square meter per child, which is shown in grey in the figure).

The figure can be used to scribble the square meter each child has to play at



PLAY AREA ATTRIBUTES

Characteristics

Spaciousness (0-1p): Does the play area offer space for motion in several directions and offer possibility for play with action : run, jump, climb, swing, balance, go sliding, tumble, roll down a hill, etc.? Are there several middle-sized areas for different use, rather than large monofunctional flat areas (e.g. football field)?

Zones (0-1p): Is the play area divided into different zones, for example: social – spacious - wild? Is one of the types of zones a calm zone, with possibility to withdraw from the masses?

Spatiality (0-1p): Does the play area have a diversed spatial design with options to choose between different sites for the same play activity? Are "rooms" placed consciously in relation to one another and inter-connected? Is there a selection of natural material: exposed bedrock, logs, rocks, bushes, trees, etc. that can create or add to spatiality?

Variation (0-1p): Is there a variation in play opportunities? Is there variation at the same site and also between different sites in the school yard? Are there challenges for all ages? Are there location-built play equipment and tools available ? Is it possible to build and construct things?

Inclusion & sociability

Using place-unique features (0-1p): Do the school yard offer play equipment that are integrated in nature and into the landscape, such as slides that make use of the terrain and topography, or play equipment placed under vegetation? Do the vegetation in the school yard provide a natural coverage, where maximum 50% of the sky is visible where children usually play?

Availability (0-1p): Are the areas that offer sand- and water play, slides, swings, climbing or cycling at least the same size as areas offering ball games? Is the school yard designed for persons with different physical or mental abilities, such as areas customized for wheelchairs; swings to lay down in and visual contrast?

Meeting place (0-1p): Does the school yard provide lighting? Does the school yard offer a selection of seating places, tables or a fire pit? Does the school yard offer unprogrammed places and structures and tools whose functions are not pre-defined? Does the school yard offer access to unprogrammed vegetation?

Storage (0-1p): Does the school yard offer storage? Is it accessible for everyone? Does the storage offer toys and movable play equipment?

Possibilities to understand the environment & a larger context

Time and change (0-1p): Does the play area change and offer different things to do as seasons and weather change: sledding, jump in rain puddles, play with the fallen autumn leaves, eat berries and fruit, etc.? Are the four elements- earth, fire, air and water exemplified in the play area: to cultivate and grow plants, use a fire pit, use wind shelters, a weathervane, do water play, etc.?

Eco system services (0-1p): Are there eco system services represented within the play area: birdhouse or nesting-box, insect hotel, meadow, dead wood, butterfly flowerbed, open storm water management, cultivation, etc. ?

Natural material (0-1p): Is the play area consisting of natural, non-toxic materials? Is part of the play area built with recycled materials? Is part of it built on site to fit the location? Is there a variation of permeable ground materials? Are hard surfaces and rubber carpet or artificial grass, limited?

Site–specific features and possibility to affect the place

Sun and shade (0-1p): Do the play area offer places to play or sit, both in sun and shade to avoid UV rays? Is vegetation creating the shade?

Varied topography and continuing vegetation (0-1p): Does the play area offer varied topography including small hills, slopes, rock formations or other terrain height differences? Is the proportion of space with topography and continuing vegetation larger than 50% of the play area?

Playable vegetation (0-1p): Do the play area offer playable vegetation like trees to hide under or climb in, bushes to play with or playfully trimmed pathways in high grass, etc.?

Loose material (0-1p): Does the school yard provide loose materials like sand, sticks, branches, pinecones, leaves or needles, rocks, berries or blocks? Are they easily accessible (placed fully exposed in the school yard or in boxes)?

ENABLING FACTORS

Enabling & promoting visits

Adult affordances (0-1p): Does the school yard provide meaningful things to *do* for adults too? Are there appropriate seating options? Is it possible to sit by a table and bring food? Are there meeting places to socialize? Does it provide a variety of play equipment? Does it have a high degree of nature?

NSD NORSK SENTER FOR FORSKNINGSDATA

Meldeskjema 472636

Sist oppdatert

28.04.2020

Hvilke personopplysninger skal du behandle?

Type opplysninger

Skal du behandle særlige kategorier personopplysninger eller personopplysninger om straffedommer eller lovovertredelser?

Nei

Prosjektinformasjon

Prosjekttittel

Brukernes opplevelser av uteområdet ved Ammerud 1-7 skole

Begrunn behovet for å behandle personopplysningene

Innhenting av samtykke fra barn og foreldrer (signatur)

Ekstern finansiering

Type prosjekt

Studentprosjekt, masterstudium

Kontaktinformasjon, student

Emma Nyberg, emny@nmbu.no, tlf: 95886799

Behandlingsansvar

Behandlingsansvarlig institusjon

Norges miljø- og biovitenskapelige universitet / Fakultet for landskap og samfunn / Institutt for landskapsarkitektur

Prosjektansvarlig (vitenskapelig ansatt/veileder eller stipendiat)

Anne-Karine Halvorsen Thoren, kine.thoren.nmbu.no, tlf: 67231295

Skal behandlingsansvaret deles med andre institusjoner (felles behandlingsansvarlige)?

Nei

Utvalg 1

Beskriv utvalget

Elever ved Ammerud barneskole

Rekruttering eller trekking av utvalget

Skolen tar kontakt med sine elever på mine vegne.

Alder

8 - 10

Inngår det voksne (18 år +) i utvalget som ikke kan samtykke selv?

Nei

Personopplysninger for utvalg 1

Hvordan samler du inn data fra utvalg 1?

Papirbasert spørreskjema

Grunnlag for å behandle alminnelige kategorier av personopplysninger

Samtykke (art. 6 nr. 1 bokstav a)

Informasjon for utvalg 1

Informerer du utvalget om behandlingen av opplysningene?

Ja

Hvordan?

Skriftlig informasjon (papir eller elektronisk)

Tredjepersoner

Skal du behandle personopplysninger om tredjepersoner?

Nei

Dokumentasjon

Hvordan dokumenteres samtykkene?

- Manuelt (papir)

Hvordan kan samtykket trekkes tilbake?

Gjennom at ta kontakt med prosjektansvarlig student eller hovedveiledere. Kontaktinformasjon finnes på samtykkeerklæringen/informasjonsskriv.

Hvordan kan de registrerte få innsyn, rettet eller slettet opplysninger om seg selv?

Det vil ikke bli samlet inn data med opplysninger som kan knyttes til en person.

Totalt antall registrerte i prosjektet

1-99

Tillatelser

Skal du innhente følgende godkjenninger eller tillatelser for prosjektet?

Behandling

Hvor behandles opplysningene?

- Maskinvare tilhørende behandlingsansvarlig institusjon

Hvem behandler/har tilgang til opplysningene?

- Student (studentprosjekt)

Tilgjengeliggjøres opplysningene utenfor EU/EØS til en tredjestat eller internasjonal organisasjon?

Nei

Sikkerhet

Oppbevares personopplysningene atskilt fra øvrige data (kodenøkkel)?

Ja

Hvilke tekniske og fysiske tiltak sikrer personopplysningene?

- Opplysningene anonymiseres

Varighet

Prosjektperiode

03.03.2020 - 02.06.2020

Skal data med personopplysninger oppbevares utover prosjektperioden?

Nei, data vil bli oppbevart uten personopplysninger (anonymisering)

Hvilke anonymiseringstiltak vil bli foretatt?

- Personidentifiserbare opplysninger fjernes, omskrives eller grovkategoriseres

Vil de registrerte kunne identifiseres (direkte eller indirekte) i oppgave/avhandling/øvrige publikasjoner fra prosjektet?

Nei

Tilleggsopplysninger

Endringsmelding: Aktiviteten er utfordrende at organisere på grunn av regler kring smittevern i barneskolen. Metoden for undersøkelsen har derfor blitt endret fra en intervju-aktivitet (child-led walk) til spørreskjema på papir.

NSD Personvern

04.05.2020 14:14

Det innsendte meldeskjemaet med referansekode 472636 er nå vurdert av NSD.

Følgende vurdering er gitt:

Det er vår vurdering at det ikke skal behandles direkte eller indirekte opplysninger som kan identifisere enkeltpersoner i dette prosjektet, så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet den 04.05.2020 med vedlegg, samt i meldingsdialogen mellom innmelder og NSD. Prosjektet trenger derfor ikke en vurdering fra NSD.

HVA MÅ DU GJØRE DERSOM DU LIKEVEL SKAL BEHANDLE PERSONOPPLYSNINGER?
Dersom prosjektopplegget endres og det likevel blir aktuelt å behandle personopplysninger må du melde dette til NSD ved å oppdatere meldeskjemaet. Vent på svar før du setter i gang med behandlingen av personopplysninger.

VI AVSLUTTER OPPFØLGING AV PROSJEKTET
Siden prosjektet ikke behandler personopplysninger avslutter vi all videre oppfølging.

Lykke til med prosjektet!

Kontaktperson hos NSD: Marita Ådnanes Helleland
Tlf. Personverntjenester: 55 58 21 17 (tast 1)

BOYS: 49 CHILDREN AGE 9-10

Where is your favourite place in the school yard? What do you like to do there?

The three most popular places have been listed in order (location). The number after the location, called "Pers." indicates the number of persons that listed this as their favourite place in the school yard. In the column "What I like to do there" all the activities that the boys do at their favourite place is listed. Some children mentioned more than one thing and some children did not say what they do there. "Times mentioned" shows the number of times an activity was mentioned for this location.

Location	Pers.	What I like to do there	Times mentioned
The soccer field	(25)	Play soccer	(21)
		Get friends, many others are at the soccer field	(3)
		Score against a goal	(2)
		Other games/play other things	(2)
The playground/ climbing structure	(8)	Climb	(4)
		Play, do playthings	(2)
		Play with my play bus	(1)
The ring	(3)	Play "OneTouch"	(3)
Other favourite places (less than three persons answered the same location)		"Haugen" (the hill) – play, slide down, climb up, play "har'n" (catch), play Star Wars	
		Ping pong tables	
		Ping pong tables behind the school – because no wind there	
		The slide behind the school	
		Playground behind the school	
		The swings – swing with my friends	
		The basketball court – play basketball	

		Anywhere as long as I can talk with my best friend	
		Where I can build things	

What other places do you like? What do you do or play there?

The top three places that the boys like (after their favourite place) have been listed in order (location). The number after the location, called "Pers." indicates the number of persons that listed this place. In the column "What I like to do there" all the activities that the boys do at this place is listed. Some children mentioned more than one thing and some children did not say what they do there. "Times mentioned" shows the number of times an activity was mentioned for this location.

Location	Pers.	What I like to do there	Times mentioned
The playground/			
Climbing structure	(9)	Play "har'n" (catch)	(4)
		Climb	(3)
		Play	(2)
		"stiv heks" (a group game; catch others)	(1)
		"Stikkball" og "veggstikkball" (a group game)	(1)
		Other games (not specified)	(1)
The basketball court	(6)	Play basketball	(3)
		Play "21"	(1)
		Play with my Lego	(1)
"Haugen"/the hill	(4)	Jump up and down	(1)
		Sit and talk	(1)
		It is steep and you can run	(1)
		Play Power Rangers	(1)
Other places and activities			
the boys like to do		the swings – swing, go fast on the swings	

	The Ring – OneTouch
	Ping pong tables – play ping pong
	Soccer field – play soccer
	Behind the school
	Nice to relax on the benches

What places do you not like? Why not?

The top three ranking places that the boys do not like have been listed in order (location). The number after the location, called "Pers." indicates the number of persons that listed this place. In the column "Why I do not like it", all the reasons the boys wrote about are listed. Some children mentioned more than one thing and some children did not say why they did not like the place. "Times mentioned" shows the number of times a reason was mentioned for this location.

Location	Pers.	Why I do not like it	Times mentioned
Behind the school	(6)	Boring	(2)
		Not much to do	(1)
		Few things there	(1)
		It is for babies	(1)
Soccer field	(3)	It is gravel, we get hurt when we fall	(2)
Basketball court	(2)	Basketballs roll into soccer field	(1)
Other places that the boys do not like and why		Ping pong tables – I am bad at ping pong	
		The running track – because 7 bullies me	
		The hill – when you run you can fall off	
		The sandbox – it is childish	

What do you like to do in wintertime? Mark where on the map.

The top three places that the boys like to be at in wintertime have been listed in order (location). The number after the location, called "Pers." indicates the number of persons that listed this place. In the column "What I do there" all the activities that the boys do at this place is listed. Some children mentioned more than one thing and some children did not say what they do there. "Times mentioned" shows the number of times an activity was mentioned for this location.

Location	Pers.	What I do there	Times mentioned
"Haugen"/the hill	(7)	Slide down on the snow/ice	(4)
		Sledging down the hill	(1)
Unspecified place	(5)	Build/make now fort, snowballs, jump in snow	(5)
Behind the school	(2)	Go sledging	(2)
Other activities the boys do in wintertime		Soccer field – skate if there is ice	
		The Playground/climbing structure – play	
		Be in the forest	
		Play "har'n"	
		Soccer field – but not when there is snow	
		The swings – but not when there is snow	

What do you like to do in summertime? Mark where on the map.

The top three places that the boys like to be at in summertime have been listed in order (location). The number after the location, called "Pers." indicates the number of persons that listed this place. In the column "What I do there" all the activities that the boys do at this place is listed. Some children mentioned more than one thing and some children did not say what they do there. "Times mentioned" shows the number of times an activity was mentioned for this location.

Location	Pers.	What I do there	Times mentioned
Soccer field	(5)	Play soccer	(5)

Playground/			
climbing structure	(2)	Play “har’n)	(1)
		Get friends	(1)
Behind the school	(2)	Slide down the big slide	(1)
		Run in the slope	(1)
Other activities the boys			
like to do in summer		Run, bike	
		Be by the ping pong tables	
		Play	
		Be in the forest	
		Eat ice cream	
		Go swimming	

What do you wish you could do in the school yard?

All answers for this question are listed below. The number after each activity or thing they wish for is indicating how many children that wished for the same thing. No number means this was mentioned by one child. Some children gave more than one suggestion and some children did not answer at all.

<u>I wish I could…. (have a/an…)</u>

Jump on a trampoline	(11)
Play on iPad	(2)
Bike	(2)
Swim in a swimming pool	(2)
Play soccer on artificial grass	
Play soccer in a mini pitch	
Artificial grass	
Artificial grass on the soccer field	

Grass on the soccer field

New grass for soccer field

Ice skating-rink

Brooms and magic wands

Bike track

Use my scooter

Drinking fountain

Play Fortnite

Bigger playground/climbing structure

Play anything, do what we want

Play and draw

Skateboard- I want to practice

More soccer goals

Go on the basket court without getting hurt- I want rubber carpet not asphalt

I want to decide. Everything I say, we shall play

GIRLS: 51 CHILDREN AGE 9-10

Where is your favourite place in the school yard? What do you like to do there?

The three most popular places have been listed in order (location). The number after the location, called "Pers." indicates the number of persons that listed this as their favourite place in the school yard. In the column "What I like to do there" all the activities that the girls do at their favourite place is listed. Some children mentioned more than one thing and some children did not say what they do there. "Times mentioned" shows the number of times an activity was mentioned for this location.

Location	Pers.	What I like to do there	Times mentioned
The playground/ climbing structure	(21)	Climb, climb w. friends	(10)
		Play "har'n" or climbing-"har'n"	(6)
		Play, you can do many things	(5)
		Be together w. others	(2)

		Play “stiv heks” (a group game)	(2)
		Exercise	(1)
The swings	(10)	Swing, swing fast and high	(5)
		Swing and talk to each other	(3)
		Hang out, relax and talk	(1)
		Swing and see if we can touch our feet	(1)
“Haugen” (the hill)	(5)	Good view	(1)
		Lie on my back, just enjoy	(1)
		Spy on others w. my best friend	(1)
		Slide down	(1)
		A lot of space to play	(1)
		Walk around it and talk	(1)
Other favourite places (less than five persons answered the same location)		Basketball court – play “all-against-all” (group game), play basketball	
		Soccer field – play soccer, be w. the boys, it is where we can be	
		Ping pong tables – play ping pong, watch others play, ping pong game	
		The bushes by the playground – play, do many things	
		The grass by the moose – do gymnastics	
		The grass by the parking lot – do gymnastics	
		Anywhere – good space, jump rope, “police-and-thief”, “boksen går”	

What other places do you like? What do you do or play there?

The top three places that the girls like (after their favourite place) have been listed in order (location). The number after the location, called “Pers.” indicates the number of persons that listed this place. In the column “What I like to do there” all the activities that the girls do at this place is listed. Some children mentioned more than one thing and some children did not say what they do there. “Times mentioned” shows the number of times an activity was mentioned for this location.

Location	Pers.	What I like to do there	Times mentioned
The playground/ climbing structure	(12)	Climb	(5)
		Play “har’n”	(5)
		Play other things/games (not specified)	(3)
		Exercise	(1)
		Pretend we are Superheroes	(1)
		Play “Fyvoldemort” (unknown)	(1)
The swings	(9)	Swing/swing w. friends	(6)
		Play “nøtt eller sannhet” (group game)	(1)
		Sing in canon with my friends	(1)
Behind the school	(5)	Do gymnastics	(1)
		Many things to do there	(1)
		Play “boksen går” (group game)	(1)
		Go fast in the big slide	(1)
Other places and activities the girls like to do		the shrubs/bushes - Pretend family play	
		the sandbox – Bild tunnels and castles, build anything	
		the soccer field – we make waterways in the gravel after it rains	
		the basketball court – it is fun	
		the grass – we do handstand	
		“Huagen” (the hill)	
		The Ring – play “OneTouch” (group game)	
		Benches/ the benches closest to the soccer field – sit and talk	
		The ping pong tables – play ping pong	

Unspecified place - play “veggstikkball”

What places do you not like? Why not?

The top three ranking places that the girls do not like have been listed in order (location). The number after the location, called “Pers.” indicates the number of persons that listed this place. In the column “Why I do not like it”, all the reasons the girls wrote about are listed. Some children mentioned more than one thing and some children did not say why they did not like the place. “Times mentioned” shows the number of times a reason was mentioned for this location.

Location	Pers.	Why I do not like it	Times mentioned
The soccer field	(8)	Do not want a ball in my face/afraid of balls	(2)
		Soccer is not fun/ it is boring	(2)
		It is only boys there, and it is only soccer	(1)
		You can hurt yourself; it is a lot of rocks and sand	(1)
		I don’t play soccer. And it is not grass- just sand	(1)
Behind the school	(3)	Others can hurt themselves	(1)
		When I do gymnastics, I lose my breath	(1)
The basketball court	(3)	Afraid of balls/the ball can hit me	(2)
		You can easily get hurt there	(1)
Other places the girls do not like and why		the playground/climbing structure in wintertime	
		The playground/climbing structure – too crowded, cannot climb	
		Difficult to play when there is a lot of snow	
		Too much gravel and sand and we hurt ourselves	
		On the roof – because it is dangerous	
		“Haugen” – nothing to do there	

What do you like to do in wintertime? Mark where on the map.

The top three places that the girls like to be at in wintertime have been listed in order (location). The number after the location, called “Pers.” indicates the number of persons that listed this place. In the

column “What I do there” all the activities that the girls do at this place is listed. Some children mentioned more than one location and some children did not say what they do there. “Times mentioned” shows the number of times an activity was mentioned for this location.

Location	Pers.	What I do there	Times mentioned
“Haugen” (the hill)	(15)	Slide down/go sledging	(12)
In the snow (unspec.)	(11)	Build a snow fort/igloo with friends	(4)
		Build a snow man, make snowballs	(2)
		Play with snow	(2)
		Play what we want, without jacket and hat	(1)
Behind the school	(3)	Go down the big slide	(1)
		Go sledging	(1)
		Usually a lot of snow there	(1)
The playground/ climbing structure	(2)	Climb (but it is cold on the metal bars)	(1)
Other things the girls like to do in wintertime		The shrubs/bushes – we make things from snow	
		Play “allvarsleken” – we run and can hide under roof	

What do you like to do in summertime? Mark where on the map.

The top three places that the girls like to be at in summertime have been listed in order (location). The number after the location, called “Pers.” indicates the number of persons that listed this place. In the column “What I do there” all the activities that the girls do at this place is listed. Some children mentioned more than one location and some children did not say what they do there. “Times mentioned” shows the number of times an activity was mentioned for this location.

Location	Pers.	What I do there	Times mentioned

The swings	(6)	Swing	(5)
		I swing to get cooled down by the breeze	(1)
The grass/lawn	(5)	Do gymnastics	(3)
		Lie in the sun	(1)
		Play “pepsi and coke”	(1)
The playground/ Climbing structure	(5)	Climb	(5)
Other things the girls Like to do in summer		Be w. my best friend; lie down, close our eyes and talk	
		“Haugen” (the hill) – talk while we lie down here	
		“Haugen” (the hill) – because we can see what the others do	
		By the moose – pick flowers	
		The soccer field	
		Behind the school	
		Go to AKS – we have water fights	

What do you wish you could do in the school yard?

All answers for this question are listed below. The number after each activity or thing they wish for is indicating how many children that wished for the same thing. No number means this was mentioned by one child. Some children gave more than one suggestion and some children did not answer at all.

<u>I wish I could…. (have a/an…)</u>

Jump on trampoline	(7)
Do gymnastics on a mat	(5)
Water fountain to play in	(3)
Adventure Waterland	(2)
A more colourful school, see colours	(2)

"Tusenfryd" (amusement park) (2)

Zipline (2)

A play tent – relax in and go inside if you are cold. We need lamps in the tent.

Ice cream kiosk in summer

Water fountain to drink from

Swimming pool

Water fights

Play with chalk

More toys or more games

To play chess

Play soccer on the soccer field with artificial grass

Bigger playground

"Roller shoe" lane by the soccer field

Bikes that looked like cars

A playground that looked like Galtvort

Broomsticks

Harry Potter costumes in the school yard

A new playground

Bike

Could eat candy and ice cream in the school yard

Look at my phone

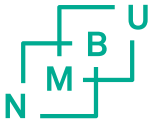
A seesaw swing behind the school

Exercise/workout facilities for children

NEUTRAL (not marked gender/marked between the boxes/written "none"): 6 CHILDREN AGE 9-10

This group is too small to systematically list responses for. Instead I have collected the responses in a short text. Favourite places in this group of children are the soccer field where one can play soccer, the swings where one can swing and unspecified places where it is possible to play group games, like "boksen går". Other good places are behind the soccer field, where one child plays with his mother, father, or friends. To climb and to play a game called "15-gjelder" is also mentioned. There is just one response in this group for places they do *not* like- which is behind the school (marked northern side),

because it is a bad place. In winter children prefer to make snow forts. They wish they could have artificial grass and that they could play (not specified what they want to play).



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