SAFE IN SCHOOL
when architecture tackles bullying

NINJA WESTBERG - MASTER'S THESIS 2016
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THANK YOU!

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ABSTRACT

Stress and stress-related illnesses affect a huge part of our population where companies fight an increasing number of sick-leaves (Wallin 2016). Mental ill-health does not only affect adults but is also found among children and youth (Währborg 2015). During childhood, stress is often connected to school situations, where one of the main stressors is found in bullying (Reimgård 2015).

Within 10 years a 1000 new schools will be built in Sweden (Teknologisk Institut 2016), it being a large investment the topic of school design is therefore important. The World Health Organization (WHO 2016) states that "a health promoting school is one that constantly strengthens its capacity as a healthy setting for living, learning and working", which makes me question; how can architecture contribute to a healthy school setting? How can architecture reduce bullying?

The purpose of this thesis is to investigate the relationship between architecture and bullying in a school environment, to find the hot spots where bullying happens and look into what changes can be made to prevent future behavior. Furthermore, it aims to raise awareness of the problem and highlight the possibilities within architecture.

The thesis is based on research about school environments and bullying, providing a background and overview of the topic. A study visit and interviews with teachers, students and school developers have brought a practical view on the work. A sketch process including models, drawings and computer modelling has resulted in a design proposal for a new primary school in Gothenburg, rooted in the research and showing an example of a physical environment where bullying is less likely to happen.

Keywords:
architecture
stress
bullying
school environment

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1. INTRO

INTRODUCTION

A stressed society

Open a newspaper or listen to the television news, most likely you will hear 'stress', the phenomenon that seems to have invaded the western societies and that in Sweden, as part of mental ill-health, is the biggest reason to the increasing number of sick-leaves among employees (Wallin 2016). In European companies, stress is considered the reason behind 50 % of all lost working days and where consequences from stress have lead to more accidents occurring at workplaces and earlier retirements (Europeiska Arbetsmiljöbyrån 2016). This, affects both single companies and society in large and becomes an expensive cost, making stress an important matter today. But mental ill-health does not solely affect the adult population, it is also seen among children and youth (Währborg 2015).

BRIS, a Swedish organization working for children's rights, report that a great number of youth are in contact with them yearly with issues such as depression, anxiety and lack of life spirit. This has been going on for years, still mental ill-health is something which continues to increase (TT 2016). How well people will be able to cope with stress in the future, is founded during their childhood (Währborg -) making stress among children a high priority question, if to lay good foundations for future citizens.

Stress among children

During childhood stress is often connected to school situations, where the main reason according to associate professor Viveca Östberg, is bullying. Bullying affects both the victim, the one who bullies, as well as the whole class as a consequence of the social climate (Reimgård 2015). Östberg suggests that one way to promote health and learning within schools is to create an environment free from bullying. This goes hand in hand with the vision for new school buildings from Gothenburg municipality, which states that "Learning environments should be designed to create safety and to prevent harassments and bullying. They should be meeting places for fellowship, where no one is discriminated by the room's design and where accessibility to everyone is promoted" (Göteborgs Stad 2014).

A report from BRÅ, the crime prevention council, shows that 10 % of Swedish school children are bullied and 10 % of children bully others (Alvant 2009). The report also describes that children who are bullied have a 50 % bigger risk of being exposed to other crimes in school settings e.g. physical violence. In the long run, bullying can have major consequences with deep depressions for victims and a pathway into criminal actions for bullies (Alvant 2009).

"Learning environments should be designed to create safety and to prevent harassments and bullying. They should be meeting places for fellowship, where no one is discriminated by the room's design and where accessibility to everyone is promoted" Göteborgs Stad.

The World Health Organization (WHO 2016) states that "A health promoting school is one that constantly strengthens its capacity as a healthy setting for living, learning and working.", which is of great importance since the school is Sweden's largest working place (Arbetsmiljöverket 2015) and since the school is mandatory for children and they, on the contrary to many adults, can not choose their work setting. It is written in the law that schools must have a preventive work against insults, harassments and discrimination (Ollmark 2013), and many schools have, yet the problem of bullying still exists (Alvant 2009).

Research from The University of Western Australia, conducted by professor Donna Cross, has found that there are links between bullying and the physical

environment (UR 2015), making this problem of interest to architects. A recent project by MAF Architects, Raketskolan in northern Sweden, was designed with this problem in mind, where teachers after completion have said that "the transparency with all the glass has helped us to reduce bullying" (Lärlabbet 2015). Within 10 years a 1000 new school buildings has to be designed in Sweden to meet the increasing number of children (Teknologisk Institut 2016). It is a large investment with a golden opportunity to include this aspect in order to achieve, as WHO states "a healthy setting for living, learning and working".

To me, architecture is style, beauty, material, colors, shape, volume, lines, subjective liking or disliking. But when architecture comes alive and becomes interesting, more than just a beautiful piece of art, is when it tackles real life problems through its art. This thesis investigates the relationship between architecture and youth bullying and aims to create a physical environment where bullying is less likely to happen. The thesis wants to highlight what can be applied in the design of a school in order to, together with the pedagogical and social work, reduce bullying and therefore reduce stress. The aim is also to raise awareness of the problem, but even more, highlight the possibilities within architecture.
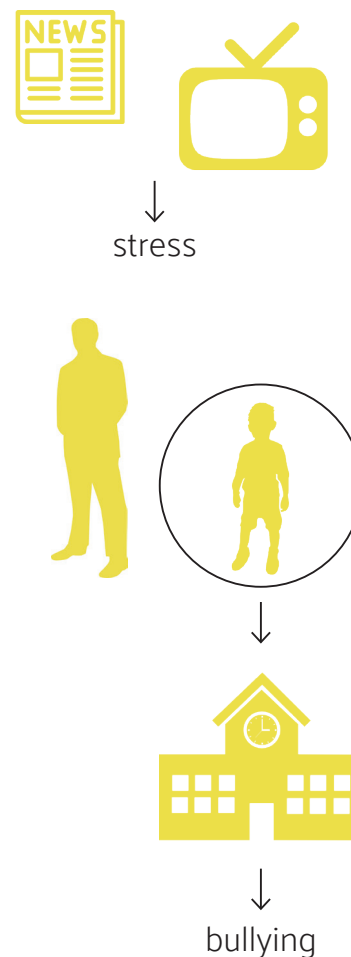
stress

bullying

THESIS QUESTION

Started off with:

> How can architecture reduce stress?

> How can architecture contribute to a healthier school setting?

During the process it narrowed down to:

> **How can architecture reduce bullying in school environments?**

METHOD

An interest in why today's society is stressed and what architecture can do to help, was the take off for this thesis. Along the way the focus narrowed down to bullying in school settings, as it is the main reason to stress among children. The thesis has been carried out as a "research for design" project, where the final design is based on literature studies, recorded seminars, television programs, interviews, study visits and a long sketching process.

UR, the Swedish education radio platform, recently produced two television series, one about bullying and the other about school environments. Both of them brought good and thorough background information with personal experiences, insights to how schools work with this issue as well as examples of what has already been designed in Sweden and elsewhere. Reports from BRÅ, the crime prevention council, gave further insights into the problem while providing guides in how to have a preventive approach towards bullying. Architect and researcher Peter C. Lippman, USA, works with evidence based design within school buildings and his book *"Evidence-Based Design of Elementary and Secondary Schools: A Responsive Approach to Creating Learning Environments"* challenged the traditional view of what a school is and how it should look. Further on, the books *"Plats för Kunskap"* by Helene Mohlin and Birgitta Ramdell

and *"Lärande och fysisk miljö : en kunskapsöversikt om samspelet mellan lärande och fysisk miljö i förskola och skola"* by Pia Björklid brought perspectives on how children learn as well as the importance of place and identity.

Conversations with school developer Annika Westberg, Halmstad municipality, related to Peter C. Lippman's theories about classroom design and provided understanding for how classrooms can promote or prevent learning through built examples. Charlotta Thodelius, PhD student at Chalmers with a background in sociology and criminology, introduced a way of working where "hot spots" are analyzed in the design in order to pinpoint what areas that later could encourage bad behavior. To get a link to schools in the region, a study visit was organized to meet teacher and researcher Ingela Bursjöö at Johannebergsskolan Montessori. The study visit highlighted practical problems such as small classrooms, bad ventilation, lack of breakout niches/group rooms and poor outdoor areas. A small survey was made among the 8-9th graders in her class about how they would envision a good environment during the first years of primary school. Bigger classrooms, better ventilation, bathrooms and group rooms close to the classroom, daylight and play rooms were some of the things mentioned.

Yvonne Ohlsson at Lokalsekretariatet, Gothenburg municipality, provided a site in Krokslätt, south of Gothenburg, planned for a future school. She also went through a typical program for a school of 200 children, suitable to the site. This program later served as a foundation for the final design proposal.

The design part of the thesis has developed during the whole research part, as input from different sources has influenced the thinking and lead to new solutions along the way. Visits to the site together with sketches both on paper, in model and in computer have examined the site and its surrounding to get the scale and important qualities in the area. After a program analysis, different floor plans were suggested and then developed simultaneously in both model and on paper, to not get stuck in one design and to find the most optimal solution. In the end a design which derives from research and that has been optimized based on the location was chosen, and further refined.

LIMITATIONS

The thesis aims at highlighting the problem of stress and thereby bullying among school children and how it relates to architecture. The outcome of the thesis is a design proposal for a school, where focus has been on the children's work environment. The thesis has not taken stress which affects the staff into consideration, it being a big and challenging question and therefore needs further investigation. The main focus in the school building has been on functions, connections and learning environments. The thesis does not aim at solving all parts of a new school and have e.g. left out details of kitchen and work spaces. Further on the thesis has focused on the indoor environment, still it has provided sufficient greenery for outdoor activities and connections to it but not investigated the function of a school yard or planned those activities thorough. The requirement for a new school building was to provide 17 parking lots on the site, whether they would actually be built or not was unsure, therefore this thesis left them out of the planning process in favor of a larger school yard.

2.
CHILDREN & STRESS

STRESS

Stress is a commonly used word today and often connected with something negative, but stress itself is a very normal condition and refers to when different hormones focus the energy where it is needed. When the body is mobilizing energy to face a stressful situation and it happens multiple times during a longer period of time without room for recovery, then it can start to affect the body and therefore become something negative and dangerous (Stressforskningsinstitutet 2016).

Reasons

There is rarely one single reason to stress and stress-related illnesses, the same goes for stress in schools and among children, where various problems together build up to a level one can no longer handle (Barnombudsmannen 2003). Among children, as a contrary to adults, the brain is still developing and therefore more sensitive to outer impacts such as stress (Magnér 2014). How well children deal with stress and how well they resist mental ill-health will be reflected when they grow up (Währborg -), laying a good foundation in today's schools will therefore pay off in future employees, one reason to why this is an important matter. Another reason is found in the ability to learn, where it has been discovered that stress-related symptoms affect learning (Magnér 2014), making children's health within a school environment of extra importance.

Barnombudsmannen, the children's representative (2003) have done research and interviews among 400 school children and identified when and where students feel stressed, which gives a brief picture of what could be improved in future schools. The working environment can be divided into two parts; the physical and the psychosocial environment. Both of these affect well-being in a school, where stress normally is connected to the psychosocial environment (Lindell & Nilsson 2015). Children mentioned factors such as poor planning of the school system, too much to do or too little time in-between activities with a lack of time for rest, a worry to not fit in or no time for individual- or group reflections. They also mentioned bullying and in connection with that a lack of good social relationships and a lack of respect for integrity (Barnombudsmannen 2003). The second category 'physical environment' included factors such as high sound levels, messy environments, boring corridors, loud and messy dining halls and poor physical space (Barnombudsmannen 2003).

Desirable improvements

When the children were asked what they would like to improve in their schools, Barnombudsmannen got preventing bullying as one of the top responses followed by better food, nicer school environments and less stress (Lindell & Nilsson 2015). Less stress and bullying goes hand in hand, since bullying is considered one of the biggest reasons to stress among school children (Östberg 2015) and is something not only affecting the exposed child, but children in the whole class (Barnombudsmannen 2003). Students in Sweden are protected both by the Swedish Working Environment law and the School law, where student's safety, their right to an undisturbed working environment and protection against harassments and bullying are regulated (Lindell & Nilsson 2015) making these factors important to work with when planning a new school. Associate professor Viveca Östberg is leading a study on young people's health in schools and mentions that during the past years schools have not only been interesting to study in the light of learning but more and more as a health promoting environment (Östberg 2015).

Stress occurs:

when there is a lack of
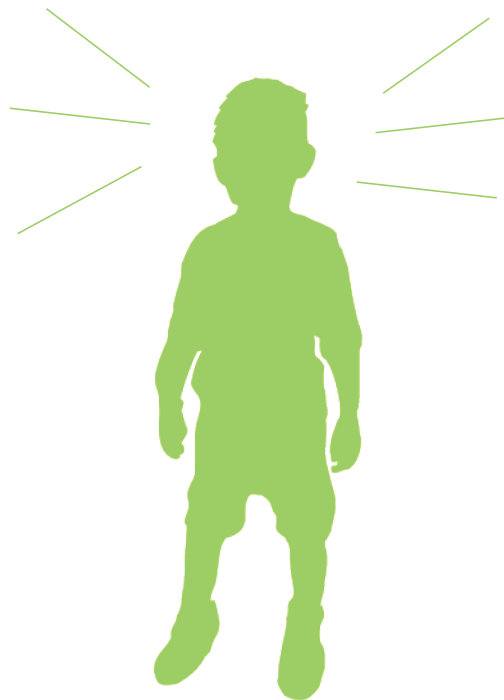
when there is

time for reflections
in small groups

teacher control

peace & quiet

time or place for
recovery & rest

freedom in the classroom -
limits creativity & activities

respect for integrity

messy environments

bullying

noisy corridors

high sound levels

hierarchy and judgement
between students

(Barnombudsmannen 2003)

BULLYING

Bullying, as mentioned earlier, is the biggest reason to stress among children (Östberg 2015). This part will give a brief introduction to what bullying is as well as to when and where it happens, and how to prevent it.

Definition

Bullying is defined by professor Dan Olweus as a repeated behavior during a specific time where one or several people use negative actions towards another person (Englund 2015). It is negative actions performed intentionally and can happen both indirect as in spreading rumors and through manipulation, or direct as in physical actions. Most of the time it starts without provocation from the victim. Insulting behavior could lead to bullying, and includes actions where one person is insulting another person's dignity (Englund 2015).

Consequences

A report from 'Brottsförebyggande rådet', the Swedish crime prevention council (Alvant 2009), shows that 10% of school children sometimes or often get bullied while another 10% of students bullies. It was also found that bullied children have a 50% higher risk of being exposed to other crimes in schools, such as e.g. physical violence. In the long run bullied children can develop deep depressions and bullies can end up in bigger crimes (Alvant 2009), making both categories a victim. Research conducted by professor Donna Cross, Australia (UR 2015) has shown that there are links between physical environment and bullying, making this topic of interest to architects.

Locations

Bullying often happens when teachers are not around (Barnombudsmannen 2003), or when they have a lack of control in areas where teachers and students are differentiated (Mohlin & Ramdell 2012). Investigations done by BRÅ, show that bullying and harassments often occur inside or right outside classrooms, in entrance halls or changing rooms which are also the areas where students feel most unsafe (Alvant 2009). According to Mohlin and Ramdell (2012) the entrance hall is a very critical space, often too small where overcrowding raises conflicts. The lack of adult control also regards the school yard, where it is not always given that staff "patrol" during breaks (Appendix 2), something mentioned as one of the most important solutions in targeting bullying according to BRÅ (Alvant 2009).

Solutions

Charlotta Thodelius, sociologist and criminologist, suggests that teacher areas should be located close to the entrances, to control who enters the building, but also to increase safety among students with the notion of "someone is seeing me". Thodelius also suggests to have open connections between the floors for visual contact, but not leaving everything open in order to prevent actions such as "hey, there is Billie, come let's go get him". Another solution could be to provide more than one corridor or multiple stairwells to help children in choosing another path if they feel threatened (Appendix 2).

> *"from the clean-up you see everything"*
> *(UR, 2015)*

In the program "Det handlar om oss" (It's about us) kitchen staff explain that when there are windows between the kitchen and corridors they get an overview over areas that normally would not be seen, and to quote "from the clean-up you see everything" shows that all staff within a school has an important role for children's safety (UR 2015).

To give staff control, from a building perspective, is about providing visual connections and openness, often achieved by glass which can be seen in Raketskolan, a new school designed by MAF Architects, where the generous glass areas has proven to reduce bullying. When glass is not desirable, e.g. in changing rooms one can instead take away the doorsteps, which allows the sound to get out and thereby giving the staff outside of the changing rooms control of what happens inside. Other ways to accomplish overview and control is to build away long corridors, to prevent hidden corners and to locate bathrooms in the central area rather than far off behind closed doors (Lärlabbet 2015). To integrate teachers and students also refers to interweave the functions. By spreading out staff areas, more than just close to the entrances, will encourage or force staff to walk through the building and collaborate between teams (Lärlabbet 2015).

HOT SPOTS

> hidden corners
> entrance hall
> in-/outside of classrooms
> changing rooms
> school yard

KEY POINTS

> sound - doorsteps
> prevent hidden corners
> avoid long corridors
> multiple stairwells
> optional routes to take
> visibility between floors
> locate bathrooms centrally
> windows from staff areas
> interweave teachers and students
> place staff areas close to entrances

Figure 1.

The refurbished and partly new built school, Raketskolan in Kiruna, northern Sweden by MAF Architects. The aim was to include an anti-bullying perspective in the design process and where the large use of glass has been proven to help.

3. LEARNING ENVIRONMENTS

LEARNING ENVIRONMENTS

The city of Gothenburg has a program for designing new schools which states that "Learning environments should be designed to create safety and to prevent harassments and bullying. They should be meeting places for fellowship, where no one is discriminated by the room's design and where accessibility to everyone is promoted" (Göteborgs Stad 2014). This leads to three branches; prevent bullying; design for fellowship; provide accessibility.

Social relationships

Donna Cross, researcher from Australia (UR 2015) describes that when children are in good relationships they are less likely to bully. Targeting social relationships can be one key to reducing bullying, which shows that it is a topic which requires many disciplines to cooperate. Research conducted separately by Pia Björklid (2005) and Peter C. Lippman (2010) highlight social relationship as important both to children and to their learning. Playing and role play are ways that children gain knowledge, since they in a much larger extent than adults, interact with their environment and one another. Rooms that can transform from a reading environment, to a dance party, to a pirate ship provide children with the possibility to create and to be spontaneous (Björklid 2005). When children

are occupied by their play, there is less time to push others down (Lärlabbet 2015).

In a classroom it is important that children see one another, when you face someone's eyes it is harder to be mean to that person (Lärlabbet 2015). Cross (UR 2015) made an experiment in a school where they changed the classroom setting from strict rows to circular tables. The group dynamic changed into being more of an "us feeling" where students focused on each other, instead of watching, judging, scoring and commenting the students that earlier passed by their row. The row structure created differences and a bigger hierarchy, compared to the circular setting. To change seating and the people to work with promote healthier relationships within a class. Teachers should try to circulate in the classroom and teach from different places to change their perspective and see all students, it could e.g. allow a teacher to catch a child rolling their eyes at someone (Lärlabbet 2015).

Accessibility

Accessibility equals removing obstacles and could relate to physical hindrances if one e.g. use a wheel chair but it could also relate to theoretical hindrances. School developer Annika Westberg (Appendix 1) explains that during a time in Sweden when individual

work was promoted it became a huge obstacle to some students who were weaker in their own competence which lead to them getting behind in the work. The teacher has an important role and is considered the biggest influence on children's learning (Westberg 2016), but where teachers today work less with transmission of knowledge and instead have more of a supportive role by activating the students through discussions, conversations, thinking together and reasoning about questions. Westberg introduced a method called 'scaffolding' (Alber 2014), developed in the USA and which recently has appeared in some Swedish classrooms. This way of working alternates from being in full class, to work in small groups, to individual work, creating space for children to learn in different ways and including the students into the work. Another big part of scaffolding is to use the surrounding in the learning process where difficult words are put up on the wall, the theme of the month is displayed through children's drawings and so on, which makes wall space important in a classroom. The physical environment has to inspire children to work and it should arouse curiosity (Björklid 2005). What is being taught at present should be displayed in the classroom but be replaced as the working themes change (Appendix 1), which requires some storage space.

The classroom

When it comes to classroom size and shape, the traditional rectangle with a clear back and front is strongly questioned by researcher and architect Peter C. Lippman (2010). Instead Lippman's research promotes the L-shaped classroom as it can have a variety of functions and still be general. In architecture, flexibility is asked for and heavily debated. MAX Architects (-) working a lot on school environments state "If you want to take it to the extreme, one can say that flexible spaces can be used to everything, but is useless to most things" and where Mohlin and Ramdell (2012) say "An architect, and everyone involved in a school design needs to have the courage to decide where the walls should be". Movable walls, changeable room sizes or general rooms are some ways to handle flexibility, where the L-shaped classroom belongs to "general rooms" even though it has an unusual shape. Lippman (2010) describes that positive outcomes from this room shape include change of group size from single work to whole class or separating smaller groups while still having an overview for a single teacher. Westberg (Appendix 1) confirms Lippman's theories, after seeing it in real life situations where teachers have praised the layout for offering the possibility to create "rooms in the room" with different activities going on simultaneously.

Students at the age of 14-16 were asked to discuss what they considered as a good primary school environment based on their earlier experiences. Most answers related to creating an inviting space with help of color, low furnishing, big windows, sound absorbing walls, lots of books and art supplies (Appendix 3). A report from University of Salford called clever classrooms, shows that colors are important and white boxes should be avoided, but too bright colors could lead to over stimulation (Barrett et al., 2015). Having children's craft displayed on the walls was also mentioned by the students (Appendix 3) which relates back to Björklid's thoughts on inspiring environments and to the work of 'scaffolding'.

Ingela Bursjöö, teacher at Johannebergsskolan Montessori (Appendix 3) highlighted things to consider within a classroom. E.g. great daylight both in classrooms and group rooms but no direct sun, "home rooms" for better security and a circular work setting, which refers back to the research by Cross mentioned previously. Bursjöö emphasized the importance of accurate ventilation, something which her students also mentioned. The report Clever Classrooms (Barrett et al. 2015) shows that naturalness as in light, temperature and air quality affect the learning with as much as 50 % compared to all outer impacts and is therefore important to consider in new design.

TO CONSIDER IN LEARNING ENVIRONMENTS

> - room for playing
> - L-shaped classroom
> - circular setting instead of rows
> - teach from several places
> - face one another in the classroom
> - wall space for mounting things
> - storage withing the classroom
> - provide possibility to change the group size

4.

a SCHOOL
in KROKSLÄTT

TASK

To propose a design for a new school in Krokslätt, south of Gothenburg, Sweden with focus on preventing bullying.

Lokalsekretariatet, a part of Gothenburg municipality which administer schools and pre-schools in the city are at the moment investigating a site in Krokslätt, an area in the south east of Gothenburg for further development by adding a new school building. The site is narrow but long, and apart from the program this is some things they wish for:

- A school for 200 -300 children aged 6-9
- 2-3 floors high
- Liberate as much green outdoor area as possible (15-20 sqm/child is desirable, hard to achieve)
- Include greenery in the area, as part of recreation
- Include gym hall with school, to share staff areas
- 17 parking lots are required, will most likely not be built, but make room for drop off area
- ONE entrance to the whole school

PROGRAM

Children's space

Classroom	8 à 60 sqm	480 sqm	496 sqm
Group room	8 à 15 sqm	120 sqm	104 sqm
Day care	4 à 75 sqm	300 sqm	300 sqm
Staff workspace	2 à 30 sqm	60 sqm	100 sqm
Chat room	4 à 8 sqm	32 sqm	33 sqm
Entrance hall	1	60 sqm	105 sqm
Drying room	2 à 15 sqm	30 sqm	26 sqm
WC	9	17 sqm	18 sqm
Storage	2 à 10 sqm	20 sqm	30 sqm
Library	1	60 sqm	66 sqm
Resting place	1	8 sqm	7 sqm
Gym hall	1	450 sqm	404 sqm

Admin & Staff

Office	3 à 10 sqm	30 sqm	34 sqm
Storage/post	1	20 sqm	29 sqm
Resting place	1	8 sqm	-
WC	2	7 sqm	8 sqm
Conference room	1	20 sqm	22 sqm
Staff room	1	40 sqm	41 sqm
Nurse & health	3	40 sqm	53 sqm
WC	1	5 sqm	5 sqm

Service area

Changing room	1	15 sqm	17 sqm
Cleaning storage	1	20 sqm	20 sqm
Storage	1	20 sqm	25 sqm
Maintenance	1	15 sqm	12 sqm
Kitchen	1	120 sqm	125 sqm
Serving area	1	20 sqm	20 sqm
Dining hall	1	100 sqm	93 sqm
Entrance + WC		20 sqm	48 sqm
total		2137	2100

~ 370 sqm corridors and communication area (0,22 % of total sqm, gym hall not included)   680

Not included:

Recycling house

Technical spaces

SCALE

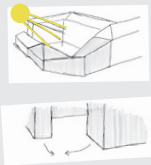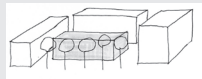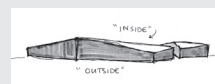|	Vittra Telefonplan STOCKHOLM Rosan Bosch	Ama'r Children's Culture House COPENHAGEN Dorte Mandrup	Kollaskolan KUNGSBACKA Kjellgren Kaminsky	Forfatterhuset Kindergarten COPENHAGEN COBE	Sjötorget Kindergarten STOCKHOLM Rotstein Arkitekter		Architectural perspective	Bullying perspective
URBAN						- unity - enclosed yard - different levels - greenery on roofs	traffic entrance situation greenery & school yard connection to surrounding buildings	visual connection between the school yard and indoors
BUILDING						- clean volume - daylight from many directions	volume & shape light conditions construction materials	no hidden corners no dead ends multiple stairs openness between floors
DEPARTMENT						- entrance hall - separated dep. - smooth flow - connection to green roofs	interaction collaboration	WC close to classrooms visual connections
ROOM						- integrated stairs - playful details - climbing wall - view between rooms	play openness daylight general / multiple functions	circular table setting instead of rows several teacher fronts visibility from the staff areas
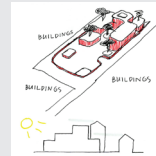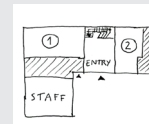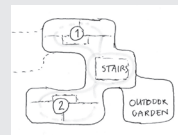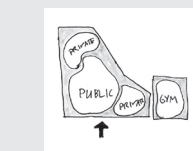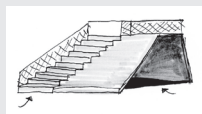
KROKSLÄTT

Map of Gothenburg and Mölndal,
west coast of Sweden

Krokslätt is an area located in the outskirts of the city centre of Gothenburg, along the highway E6, leading towards Norway. To the west is a residential area, climbing up the hill to Johanneberg and Guldheden. Between the residential area and the highway, there used to be two stripes of industrial buildings but is now undergoing development and the west stripe is turned into housing- and office blocks. With more homes in the area the number of people grow, and with that the amount of children, creating a need for a new school in the area.

the site

planned buildings

public transport

SITE ANALYSIS
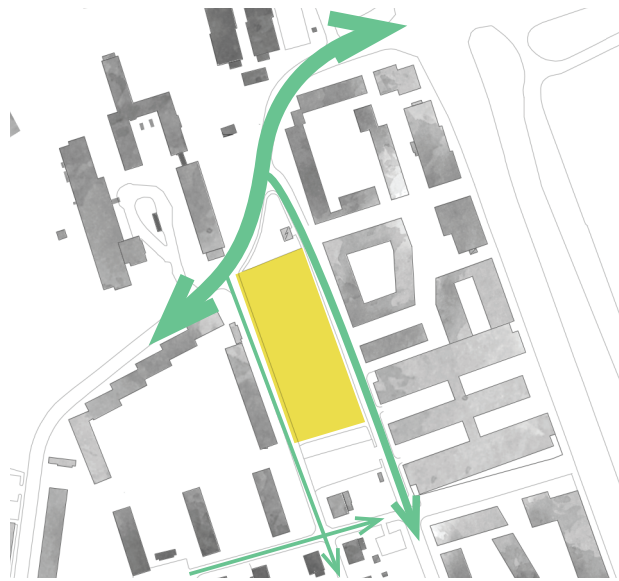
CAR TRAFFIC

The thickest arrow connects Guldheden and west of Mölndal with the highway (E6) and is therefore highly trafficked all day, but with peaks morning and evening.

The site is surrounded by cars on three out of four sides, therefore safety becomes extra important. The design has to enclose a safe school yard, yet not create a prison-like atmosphere with high fences.
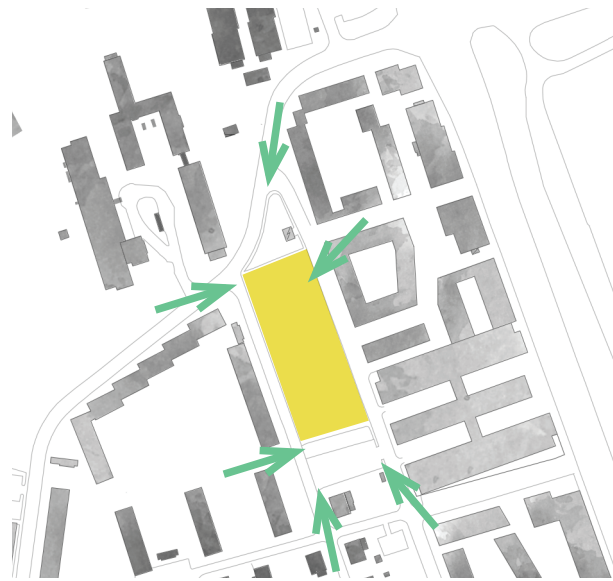
WAY TO SCHOOL

With the new apartment blocks in the area, children can now arrive from most directions. Therefore it is good to prevent a clear back/front feeling and to make it possible to enter the yard at several points.

Children might arrive by foot or bike which makes it desirable to create at least one traffic safe road. But likely most children will be dropped off by parents, which might increase car traffic around the school.
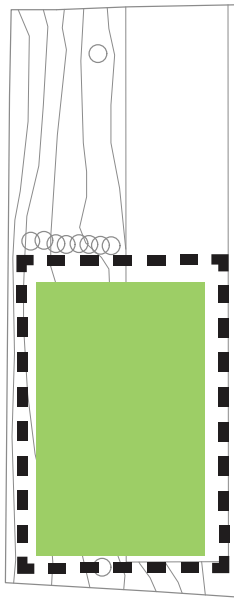
GREENERY & NATURE

The site today is mainly a green lawn, with garages towards Ebbe Lieberath's street. In the middle of the site one finds a row of eight high lindens, desirable to keep, and to the north two alder trees. The trees provide shade and take care of CO_2 from traffic, making them important on the site. It is desirable to have 15-20 sqm green space/child, which allows 1/3 of the site to be built. To the north west there is a larger forest area for hikes with the children.
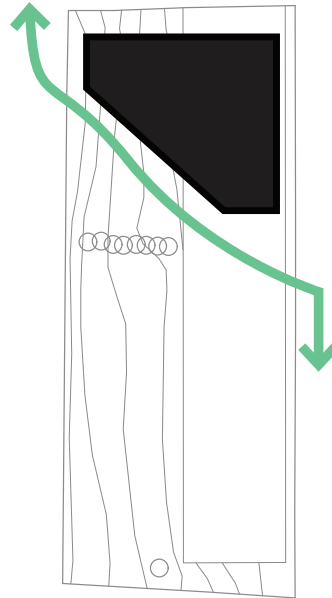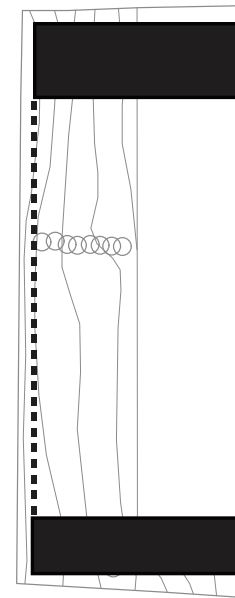
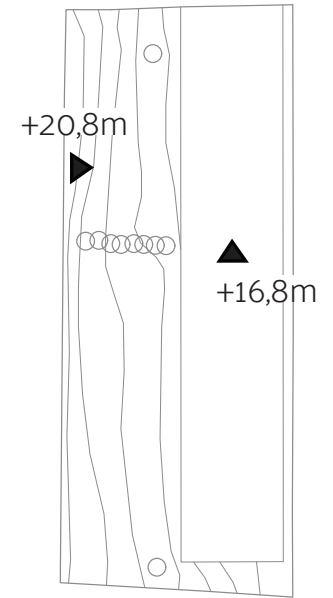# SITE CONCEPT
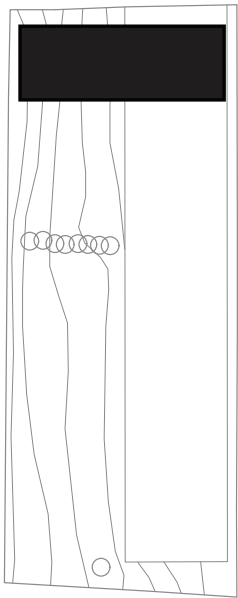
Close off
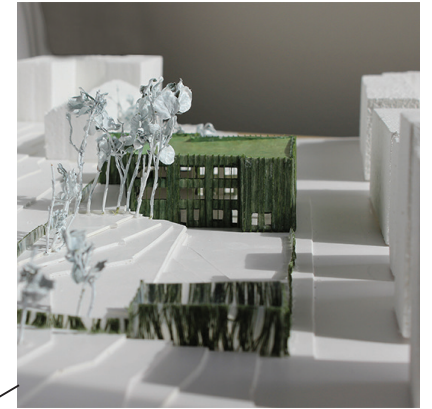main traffic

Create a
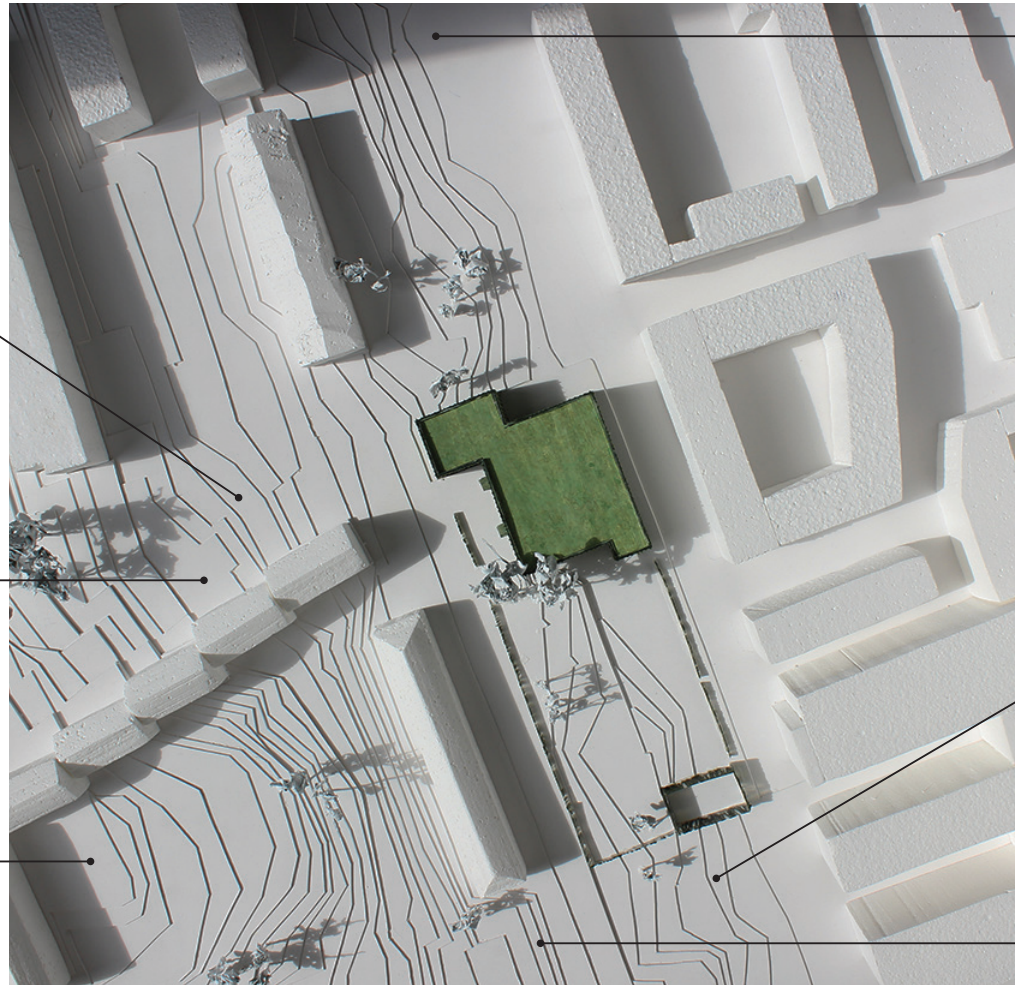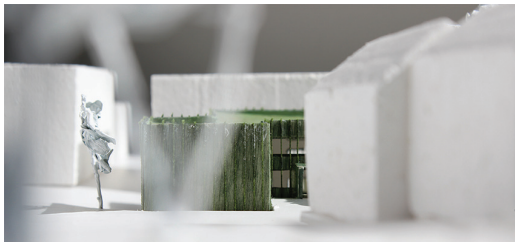united
school yard

Orient
towards
the yard

Frame
the site

+20,8m

+16,8m

Entrances
on two
levels

SITE PLAN

+16,5m

Ebbe Lieberathsgatan

Fredriksdalsgatan

+20,8m

Brynolfsgatan

+16,8m

+17,1m

N

1:800 (A4)

0   10   20   30   40m

SITE PLAN
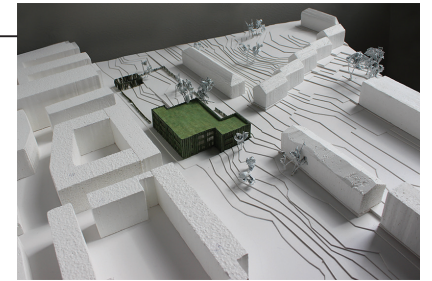
BUILDING CONCEPT

To reduce bullying with help of architecture and thereby create a healthier school setting.
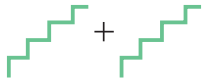
How?

1. Create overview for staff

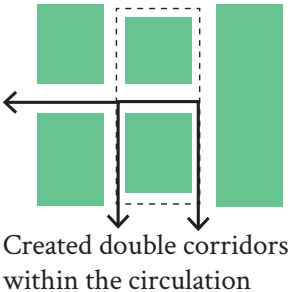2. Spread out staff areas - make them move around

3. No dead ends

4. More than one stair

5. Visual connections and openness between floors

BUILDING DEVELOPMENT

Started off with an L - movement between the two entrance levels

Placed functions around the movement

Resulted in a dead end

Separated the functions to get circulation in-between

Created double corridors within the circulation
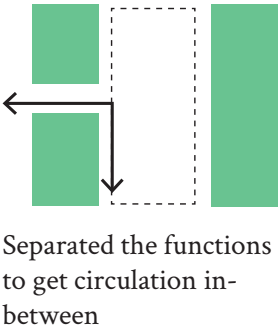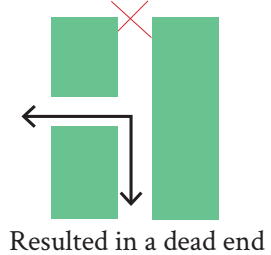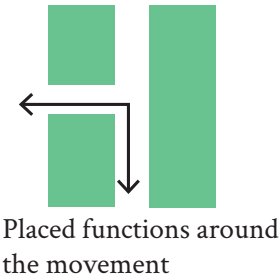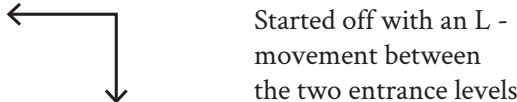
DIVISION OF FUNCTIONS

The building required three floors to free enough outdoor area on the school yard for the children. To connect with design criteria 2, all staff functions were divided between the three floors.

Level 2
Classrooms
Day care
Staff work place
Library
School health

Level 1
Student entrance
Classrooms
Day care
Staff work place

Level 0
Food
Administration
Staff room
Gym hall
Service

View 1 - towards the main entrance

FLOOR PLAN

LEVEL 1 +20,8 m

open down
(gym hall)

View 1.

day care

drying room

classroom

entrance hall
open up

open up

classroom

classroom

A

A

teachers
work space

day care

classroom

B

B

1:400 (A4)

0   10   20m
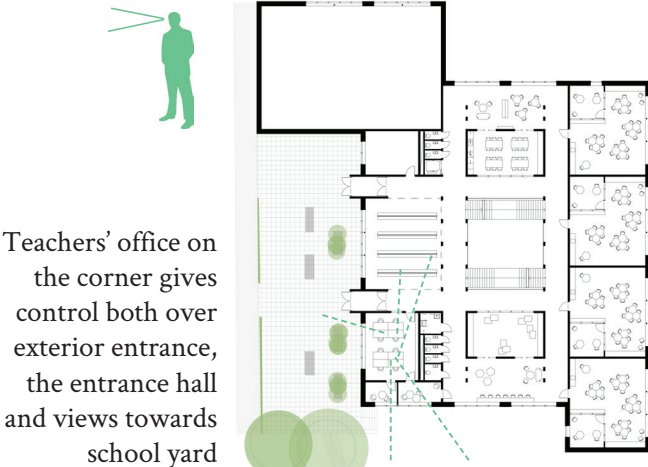
Teachers' office on
the corner gives
control both over
exterior entrance,
the entrance hall
and views towards
school yard
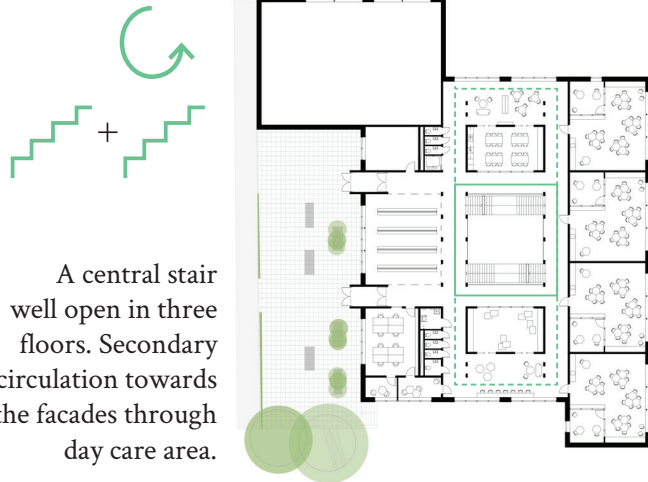
A central stair
well open in three
floors. Secondary
circulation towards
the facades through
day care area.

View 2 - over the entrance area towards teachers' office and school yard

View 2.

entrance hall

open up

Classrooms placed with windows towards east/ north east for good daylight but no direct sun

teachers' office

day care - music room

classroom

chat rooms

day care arts & crafts

group room

chat room can also be used as a group room from day care area

wardrobes on both sides for storing mattresses, pillows, music equipment doors covered in sound absorbing panels

during the day students can use the day care area, if the class needs to split up

1:200 (A4)

0   10   20m

FLOOR PLAN

LEVEL 2 +24,8 m

The more quiet functions, such as school health, library and student resting room are placed in the north west part

ventilation & technical

storage

nurse

day care

library

open down

open down

classroom

classroom

teachers' work space

day care

View 3.

classroom

View 4.

A

A

B

B

1:400 (A4)

0   10   20m

Teachers' works space is in the same place, with school health staff opposite the building to control the open space in-between.
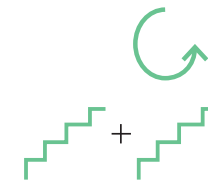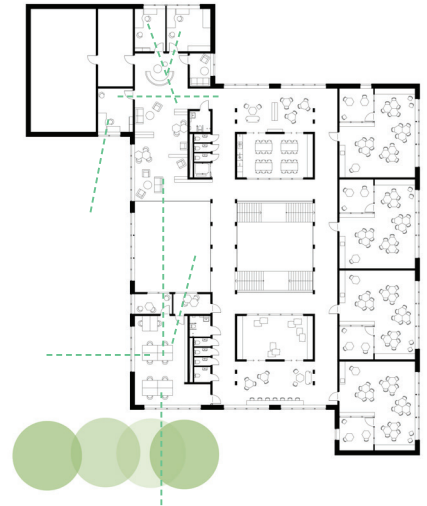
The same movement as on floor 1, but here the secondary circulation also goes through the library.
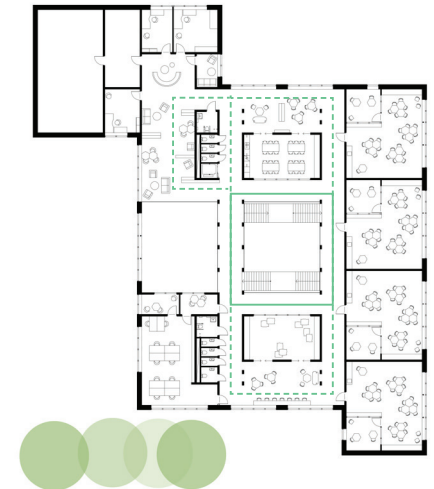
VERTICAL CONNECTIONS

The library is turning away from the corridor to get a more private area, but still visible and accessible e.g. from the day care area and entrance

Windows on interior walls connect the two day care areas
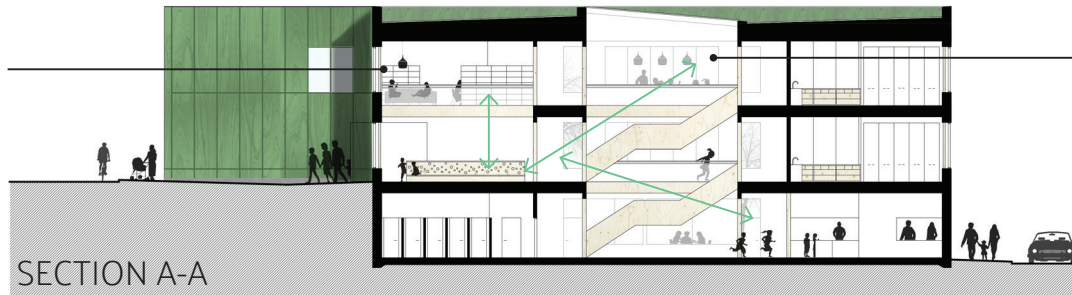
From the entrance hall one easily gets an overview of the floor, where the open stair well provide visibility both up and down
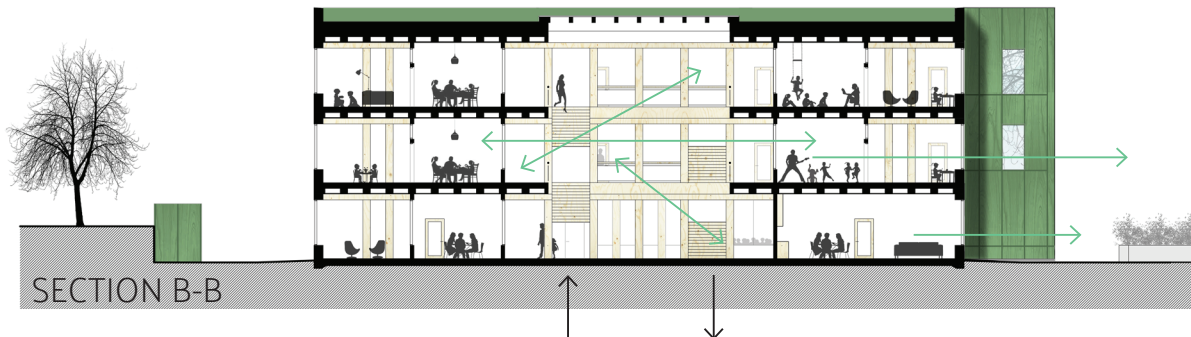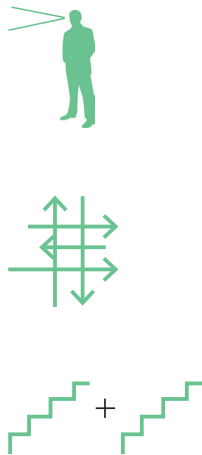
SECTION A-A

SECTION B-B

+24,8 m

+20,8 m

+16,8 m

1:400 (A4)

0   10   20m

View 3 - from music room in day care area towards the school yard

View 4 - over the classroom, child perspective

CLASSROOMS

1:200 (A4)
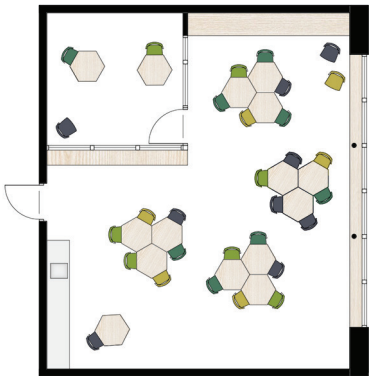
Welcome
to class 2b!

This lesson we
work in groups..

Today, we're
going to have
a test.

How was your
holiday?

The standard layout of the classroom.

The class works in smaller groups and the teacher takes out one group at a time, discussing what they have worked on. The L-shape gives the teacher a "private corner" in the back, but still with overview of the rest of the students.

When there is a test or another need of separating children, the room and tables work with two children opposite each other by every table.
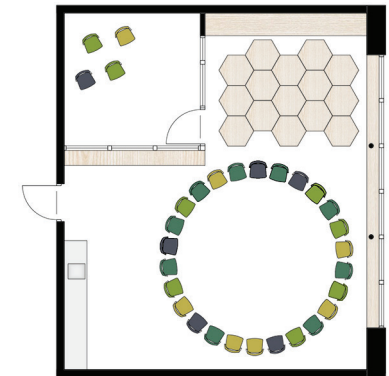
Sometimes it might be good to bring the whole class together and talk everyone face to face, by moving the tables into the corner of the "L" sufficient floor area is provided.

All the classrooms are oriented towards east/north east which means some direct sun early in the mornings. On the other hand a new 5 story housing block will be built opposite the street in the coming years, blocking the low standing sun during winter months. The windows will therefore not contribute with too much heat, but only let in great amounts of daylight to the rooms.

In the back of the classroom, one wall is covered with wardrobes. The doors are covered in acoustic tiles, to help reduce noise levels in the room. At the same time the tiles soft outside serve as a notice board for posters, students' craft and other material.

Figure 7.

The same system is used in the music room in day care, although with higher absorption. In day care the doors hide storage for mattresses and floor pillows.

Figure 6.

View from sink, adult perspective

View from whiteboard, adult perspective

FLOOR PLAN

LEVEL 0 +16,8 m

open up

gym hall

gym hall
storage

chang.
student

water

storage | clean

recycle

staff | conf.

kitchen

open up

chang.
staff | staff

main.

office

A

B

B

A

1:400 (A4)

0   10   20m

View 5. (but further down)

Kitchen and dining are placed towards the street and with connection to recycling and grocery deliveries

Kitchen staff have control both over dining area, stair well and corridor from the kitchen
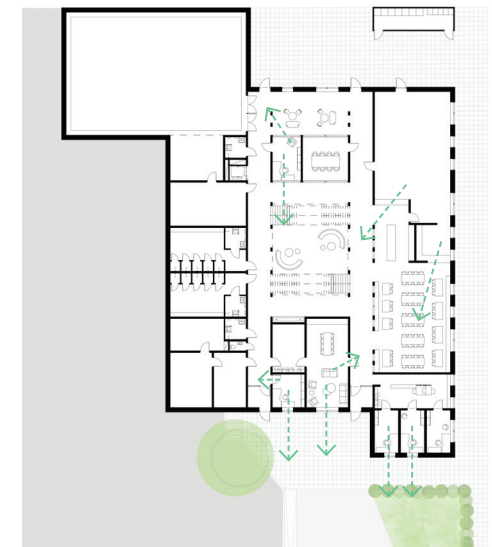
The staff room and administration have outlook to the school yard for supervision

View 5 - towards the lower entrance

SECTION A-A
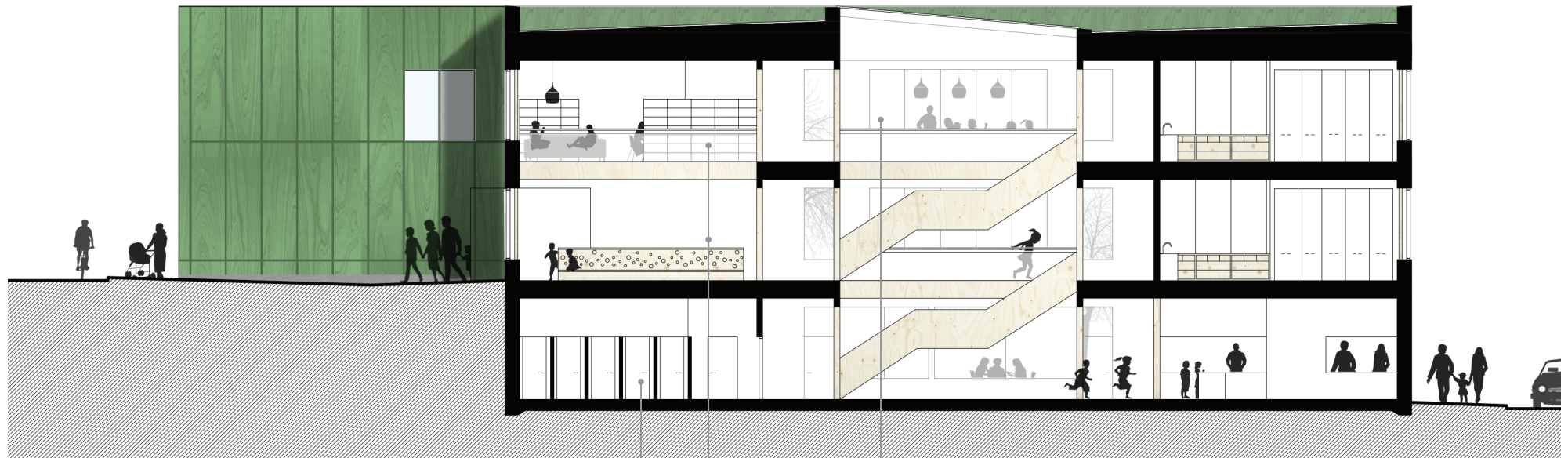
0   10   20m
1:200 (A4)

A problem in many schools are that children do not want to shower after gym class, feeling exposed and naked with risk of bullying and someone taking their photo. Instead of large shower rooms, smaller showers with a lockable door provide privacy for students, but without doorsteps for sound to transit to staff areas.

Visual connection between library area and entrance hall

Interior windows between day care areas and corridors

SECTION B-B

day care play area   day care kitchen   day care music room   day care play area

day care play area   day care kitchen   day care music room   day care play area

conference room   staff room

1:200 (A4)

installations

light stripes
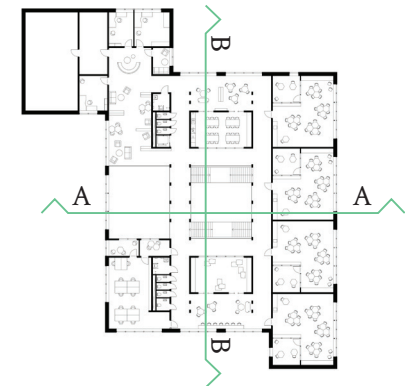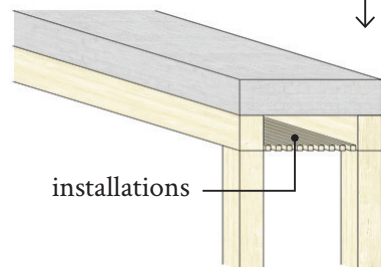
In-between the load bearing beams, the concrete slab and a suspended ceiling out of wooden bars a space is naturally created for technical installations. Between the slab and the wooden bars sound absorption panels can be installed, and along the wooden bars light stripes are placed to provide the rooms with light without interfering with the design.

On both sides of the stairwell day care area is placed, this is where children spend time before and after normal school hours when parents are still working. That require other functions of the space, e.g. more room for play and physical activities. The music room is a room without furniture, something which easily can be brought in from the space outside if needed. Instead, wardrobes are filled with mattresses, pillows and instruments for children to be active and creative.

CONSTRUCTION

sedum cover
water protection layer
insulation
vapour barrier
concrete slab
wooden beams

wooden board
installation layer
load bearing structure
of massive wood
vapour barrier
insulation
wooden board

interior floor (linoleum)
concrete slab
insulation
vapour barrier
insulation
capillary breaking layer

1:50 (A4)
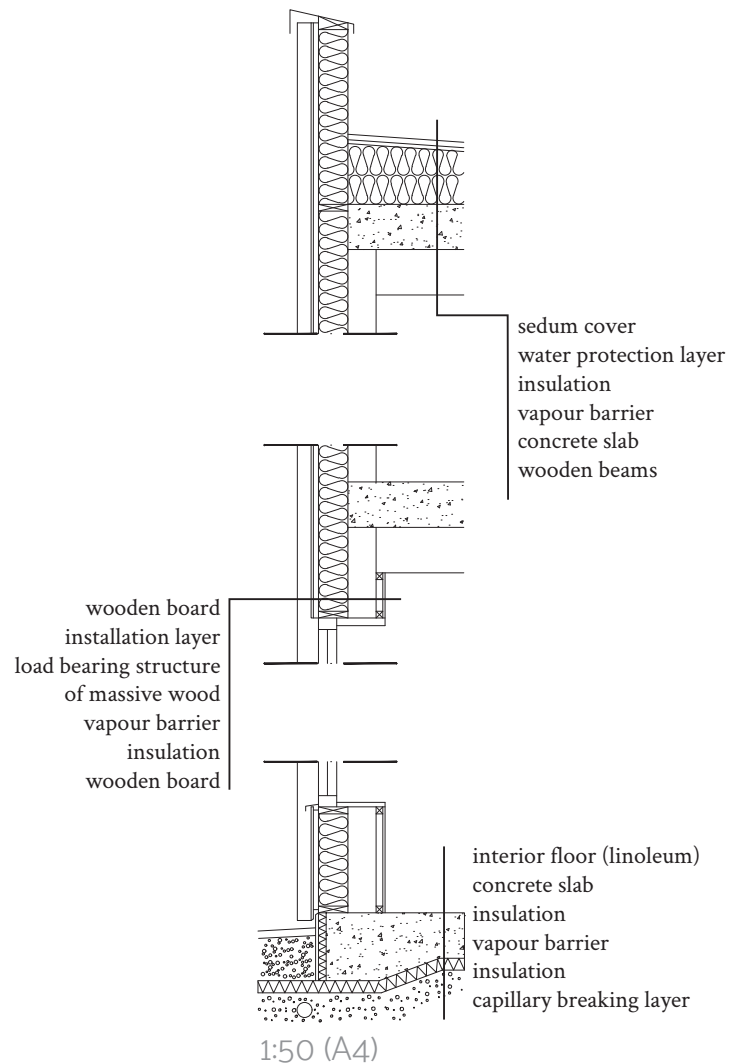
The building consists of a grid system, with a load bearing structure of massive wood in the outer walls as well as in the walls along the corridor (solid lines). The middle part of the building is mainly open, here loads are taken down through two rows of pillars.

On the load bearing structure, panels of 1200 mm width are resting (dashed lines). The panels consist of two wooden beams with a concrete slab on top. This to take advantage of the materials' strengths, where concrete on top is used in compression and wood below in bending. Advantages of using a combination is less need of concrete, a slimmer appearance and possibilities for greater spans compared to a structure entirely in wood.

The roof is covered in vegetation, both to help reduce CO_2 in the area, to provide beautiful view for surrounding housing blocks and to take care of rainwater on the low inclined roof.

1200 mm
300 mm
300 mm
200 mm
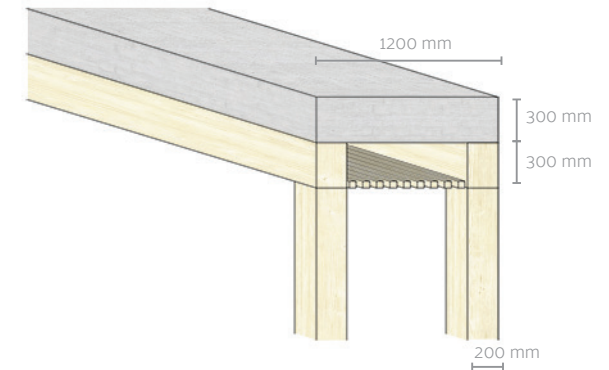
not in scale

FACADE SYSTEM

The facades have the same structure as the overall building, divided into pieces of 1200 mm width. The design of window openings started in the classrooms and the desire to bring in as much daylight as possible. Different alternatives were tested, as seen to the left, where the bigger picture is the final choice due to an equal amount of light in the whole room but still keeping the corners free to furnish.

The window stripe is then repeated around the building on floor 1 and 2 in a similar pattern. On ground floor (level 0) the windows are broken up into a smaller pattern in order to create a lighter feeling on the facade as well as highlight that the floors host different functions.

Figure 3.

Figure 4.

Figure 5.

The facades consist of multi-layered wooden panels, similar like plywood but with less and thicker layers making the panel more consistent to weather at the edges. The panels are repeated with 1200 mm width, and in the joints connected to a bar which is extruded from the facade to create a pattern on the otherwise flat surface.

The projects to the left served as inspiration, Villa Eder by kod architects and Mänttää Art Museum by MX_SI architects.

ELEVATIONS

LIEBERATHSKOLAN

FACADE TO WEST - CHILDREN'S ENTRANCE

1:200 (A4)

The extruded bars change the appearance of the facade as you see it from different angles.
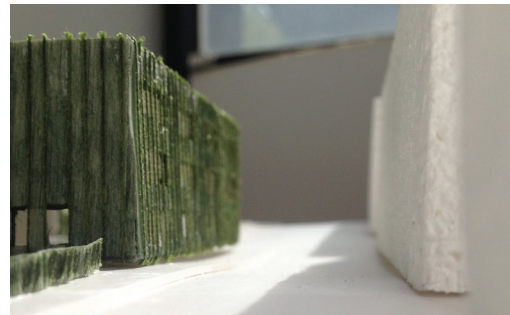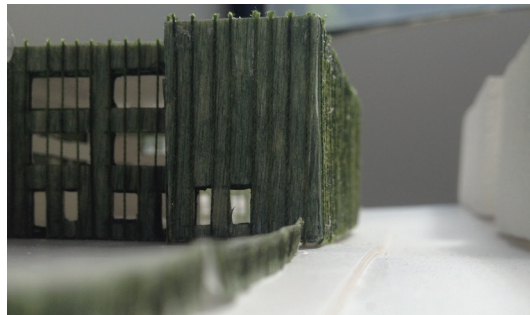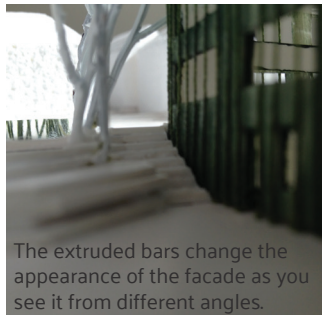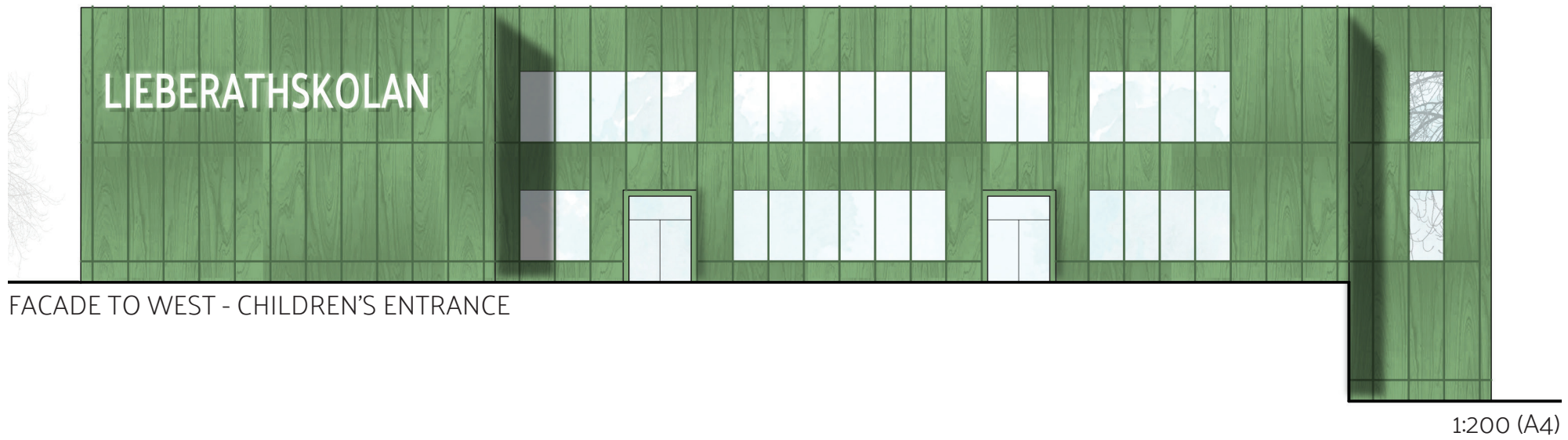
ELEVATIONS
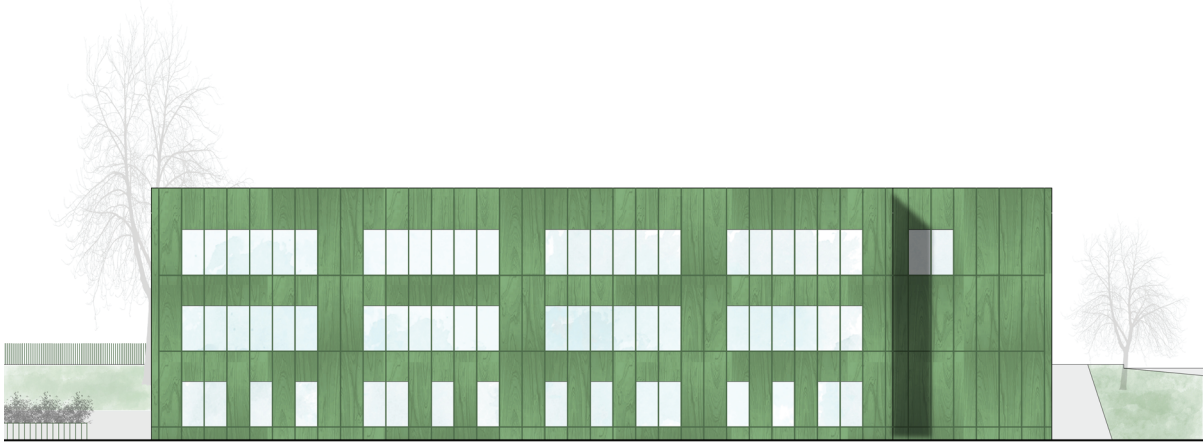
FACADE TO EAST
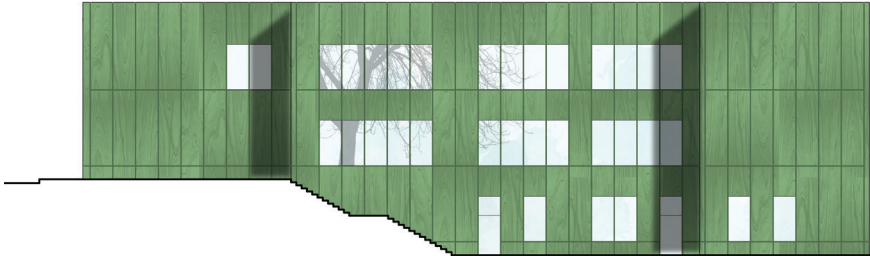
FACADE TO SOUTH - STAFF ENTRANCE

FACADE TO NORTH

1:400 (A4)

0   10   20m
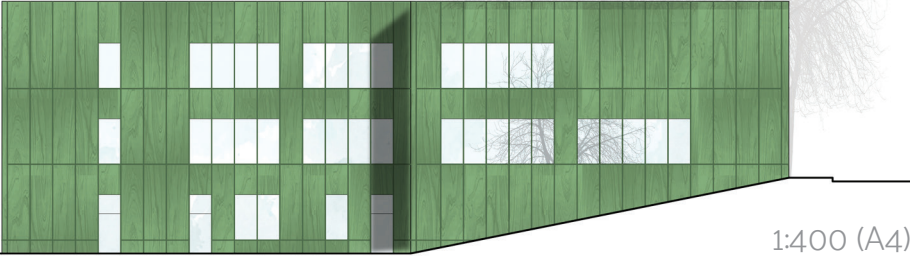
THE NEIGHBORHOOD
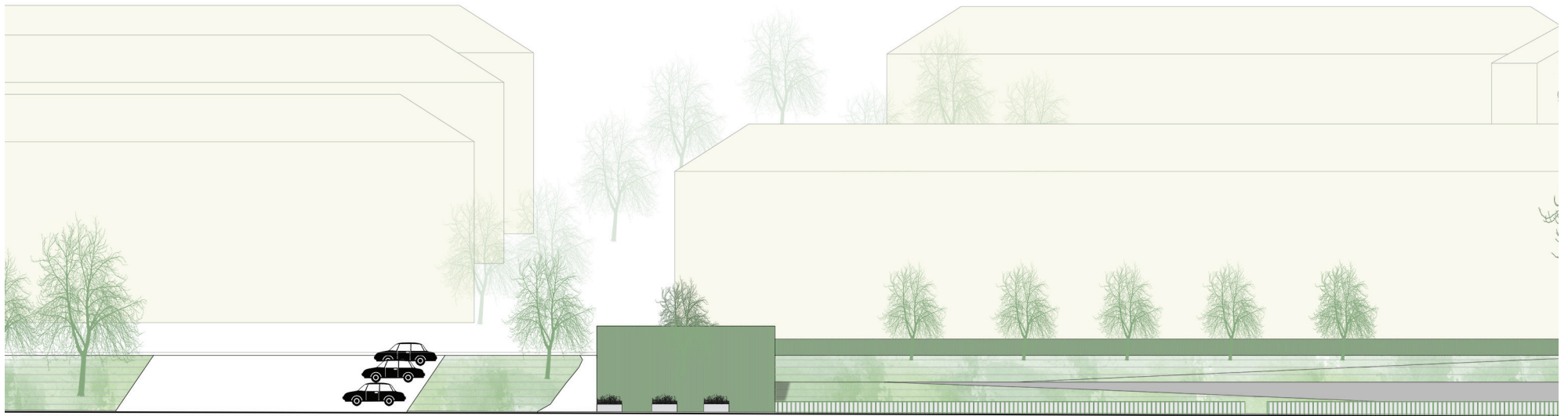
MATERIAL & COLOR IN THE AREA

brick
wood
plaster
corrugated steel

earthy tones
mix of dull & bright pastels
light clay/black/white/grey
(planned buildings)
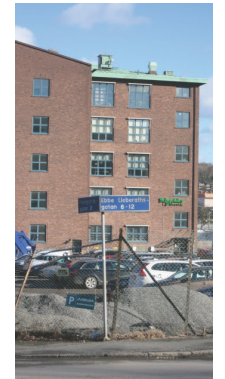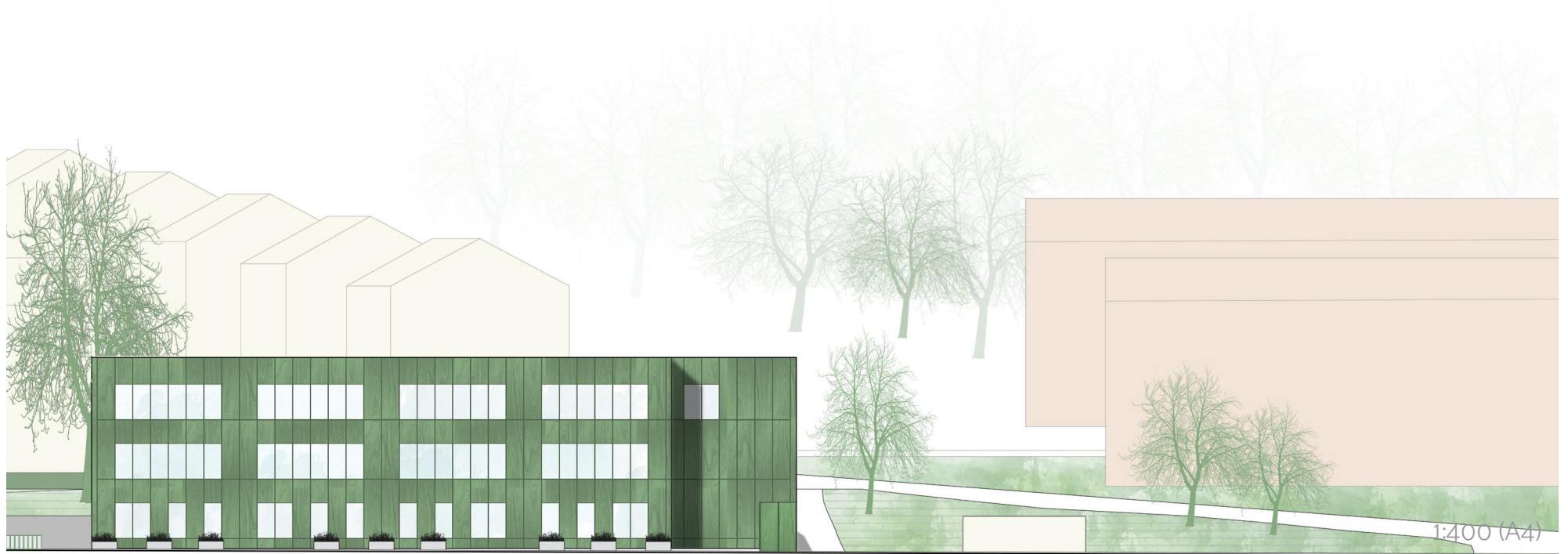
The new school is situated between a residential area to the west, with yellow brick blocks from the 50's in three floors and a planned new residential area to the east with white and black 5 floor buildings (from early renders of the area, it might change). North of the site is a colorful neighborhood seen on the photos from previous page. South east of the site is a huge black building in a shape of a M, which from the site feels a bit intruding and further south are villas in a variety of materials in light colors.

Figure 8.

Figure 9.

The facade color was chosen with inspiration from the project "Slotts-berget" by KUB Architects and a desire to connect with the brick facades behind the school. Green is found both with the light yellow brick and the dark red, e.g. seen in the two buildings from Gothenburg to the left.

Figure 2.

5. DISCUSSION

DISCUSSION

Designing a new school is a complex task and this thesis did not aim at solving every problem, but rather dig into one specific topic. The more I looked into references, research and my own sketch process the humbler I got towards the topic and the thesis question. I looked upon this project as a possibility to dig into a topic I found interesting, at highlighting questions that might not always be raised and to show that it is important that architecture connects with research and has a foundation for its design.

This thesis has focused around the question of bullying in school environments, but a school is so much more than this problem. This thesis has just touched the topic of learning environments, where I choose to try an unusual and sometimes questioned classroom layout. This attempt shows that there are tons of questions not even raised in this thesis, questions very important for a school. How do children learn? What is needed of a physical environment to challenge and inspire students? How do teachers find rest in a hectic and challenging workplace? These, and many more, are topics that would change, influence or require compromises about the design. In the following discussion the location of the building, the division of functions, the classrooms, the choice of material and color and sustainability will be evaluated.

Location of the building

From the site analysis the location of the building was chosen, mainly to let the building be a barrier between the school yard and the more heavily trafficked roads but also to accommodate a larger school yard clearly visible from the building. As bullying was the focus, the building should not provide possibilities to create an unattended back side. When seeing the final design this is clearly achieved, but now, the building is very separated from the yard and an in-between layer is missing. You either have the building, or the school yard. This is a part I would have liked to investigate further, alongside with a development of the school yard and play areas, to see how it could have been integrated.

school yard with outlooks from staff areas, not possible to hide behind the school (at least not without leaving the school yard...)

As the site was narrow and the lack of green outdoor area is a present problem in the larger cities in Sweden (Andersson 2016), the school would have to be divided into several floors. The municipality suggested two to three, where I choose three to get the required outdoor area. I looked into alternatives where roof gardens could be a solution, but articles of already built roof gardens in learning environments convinced me that so far it is not a good option. An evaluation mentioned in the Swedish newspaper "Svenska Dagbladet" (Andersson 2016) describes that already built roof gardens in Denmark either are not in use or a reason to a lot of frustration. That together with a desire not to split the outdoor area in order to provide better overview resulted in having the whole school yard on ground level.

As the site is located between trafficked roads it required some sort of fence. Around the soccer field the need is higher to prevent footballs of ending up among the cars. Many schools have the traditional metal fence in crossed wire, here I instead suggested wooden bars to speak the same design language as the school and to unite the site with the building. When it comes to bullying, this could of course be a so called hot spot since the bars would block some of the insight where a metal fence instead would provide more visibility. My experience is that the soccer field

is always occupied with children and the one place where most noise comes from; therefore, I imagine the sound to still transmit out reaching teachers on the ground even though full visibility is not provided.

Division of functions

The main solution to reduce bullying found through research was to integrate staff areas with students' and to provide visual overview. Therefore staff spaces were placed opposite each other for better visibility, both between spaces and when staff moves from one place to another. They were also placed on corners to provide outlooks to the surrounding school yard. The question; why not place all the staff in the middle, for a circular overview? was raised, and that setting would create a similar design to nurse bridges in hospitals.
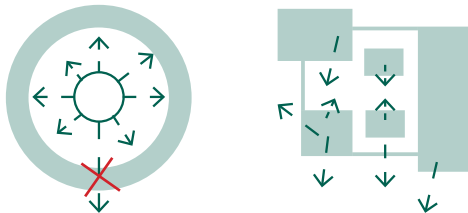
Of course it would enable a great overview and control of the surrounding interior space, but when teachers have to spend planning time at their desk, the need for direct daylight as it is a work space would

not have been met. That led to the placement along the exterior wall. A second reason was by having the staff in the middle, their connection to the school yard would be cut off, and what happens during breaks would have to rely on the teachers patrolling the yard. By having staff spaces along the facade, teachers from inside could spot things which might go unseen to those outside.

The task was to provide eight classrooms, split into two teams with connecting staff spaces and day care area.

horizontal division   +   +   vertical division

When looking into examples and research from P. C Lippman among others, I found that creating "home spaces" where a few classes are connected to their own entrance and day care area can have positive effects on safety among students. On the other hand, this would lead to smaller co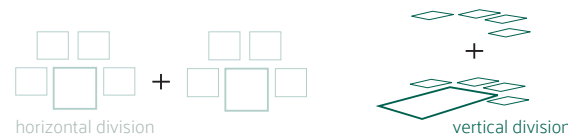mmon spaces and maybe more overcrowding, another problem to fight when talking about bullying. It could also lead to a split between teams, creating a "you and us" feeling within the school, this of course depends on how the staff treat the issue, but could have consequences on the school

work. Since this school is rather small, 200 students, I choose to integrate all students in a common entrance hall and a centrally located stairwell. Then, the students are split between two floors where four classrooms connect with day care area and teachers' work space. In this design the students still have one sort of team division, but always passing all spaces throughout the day in order to get away from a "your floor and our floor" division.

A wish from the municipality was to include the gym hall with the school building to provide better work climate for gym staff, who otherwise would be cut off from the school environment. As the gym hall requires higher ceiling than other spaces this of course became troublesome in the planning. The initial idea was to have the gym hall in a central location, something you would meet when entering the school and thereby making the health promoting focus visible. But gym class is a place where many students feel uncomfortable (SVT play 2016), and making the gym hall visible could lead to even less participation or to an increased feeling of being watched and judged. Therefore, the gym hall was placed in a corner, where daylight comes in on the second level but where you can never stand and look directly into the hall. The connecting changing rooms are one of the hot spots for bullying (UR 2015) but by providing shower niches

with locks students can get undressed and shower in privacy. Another solution could be to take away the door steps between changing rooms and the corridor outside in order to let sound transmit out making staff aware of what is going on inside.

Classrooms

Early on in the process I was in contact with research from architect and researcher P. C. Lippman (2010) who showed an alternative to the traditional classroom layout. Lippman, and other researchers with him, pointed out the fact that society has changed a lot the past 200 years where the way schools teach and how the layout of the learning environments are arranged look more or less the same. From this research it was also clear that with a static learning environment it can be hard to change the way one teaches, and the other way around which makes it important to have a close work between architects and teachers. This was something which the thesis lacked, a team of teachers to collaborate with.

The final design was based on the L-shape which Lippman mentions both in his book *"Evidence-Based Design of Elementary and Secondary Schools"* (Lippman 2010) and in the article *"The L-Shaped Classroom: A Pattern for Promoting Learning"* (Lippman -) where

the layout is further investigated. The L-shape design is based on a classroom as an activity setting where teachers have the role of a facilitator guiding the student's participation rather than a teacher-directed teaching as of previous years. This is also a way of working which Westberg (Appendix 1) describes when talking about the teachers' role in Swedish schools today. The design can of course be a hindrance if one looks for the traditional way of teaching with strict rows and a teacher-direct teaching from the front, but since bullying was the focus and research from Donna Cross (UR 2015) showed that strict rows was not desirable if one wanted to reduce bullying, it is yet another reason to try another classroom design. Lippman (-) also mentions that one of many advantages of an L-shaped classroom is that it is possible to divide students into smaller groups without the groups being too close to one another, promoting concentration among the groups. Westberg (Appendix 1) also found out through conversations with teachers in her municipality that this classroom layout was much appreciated in schools where it already exists.

In this thesis the L-shape is arranged around a group room (which was required in the program) but where glass between the rooms enable visibility, contact and daylight. After evaluating the final design, I think the way the group room and classroom interact could

have been developed further. Now the room is a dead end, what if it was arranged as a walk through?

When in contact with teachers the lack of extra space, group rooms, or break out niches if often mentioned and this is an area which I did not have time to look into but which I think would have been interesting to develop more. As the functions are arranged right now, the day care area is planned as an additional space for classrooms, to be used during day time when extra space is needed. I think what happens along the corridor between day care and classrooms could be transformed into something more dynamic, providing more variety of work settings. At the same time this is a primary school for young children, where unattended work might not be as usual compared to older children. Right now the wall dividing the classroom and corridor has a load bearing function, not desirable to puncture more than necessary which might happen if trying to create a more dynamic space.

Flexibility

Flexibility has not been the focus in this thesis, yet important to mention since it is a school where the amount of children vary from year to year. Lippman (2010) talks about learning environments as a flexible space where different room sizes is something to strive for. This is a new way of designing schools which can be seen in some examples today, where the school is divided into smaller teams with spaces stretching from a few large rooms down to small group rooms. It could easily become something dynamic and interesting but at the same time troublesome if there are not enough large rooms to host classes, at least the way classes look today.

As the division walls between classrooms are not load bearing in the final design, they could be removed if other room sizes are required, still they count as fixed walls. There are different opinions when it comes to foldable walls, especially in schools with sound requirements, but if it would be an option this could be installed between classrooms and suddenly flexibility would be provided on a much larger scale. I have tried to create rooms where the furnishing of the room can be rearranged in a variety of ways and thereby allowing flexibility inside the room, instead of between departments.

Material and Color

The building has a load bearing structure of massive wood. The choice of wood comes from a desire to use renewable resources and to use a material that can be found locally. The secondary beams are a mix of wood and concrete, both to take advantage of the benefits of the materials and to minimize the amount of material needed. This can be seen in examples by the company Ramböll, which developed the idea in collaboration with Cambridge University (Strongman 2008). By using concrete slabs on top of glulam beams one gets a larger free span between pillars, desirable in school buildings with large open rooms. The mix of materials create a slimmer construction compared to if it would be entirely in wood and therefore requires less material.

If concrete is a sustainable material or not is heavily debated at the moment, but in this solution the amount of concrete used is a lot less compared to a structure entirely of concrete. To use concrete in the slabs also increases sound insulation between floors, since concrete blocks sound better than wood. By using wood in the walls rather than concrete, the indoor climate is improved due to the large amount of wood in the load bearing structure which works as a vapor barrier on the inside, but still complemented with a plastic film between the structure and the insulation to be on the safe side (TräGuiden 2003).

The choice of wood as the primary construction material, derives from aesthetic reasons as well. To expose the wood in the interior, both on pillars, in the ceiling as well as on details such as doors- and window frames, will contribute with warmth to the school. It is also a material which is durable to the wear of children, something which can be seen in schools in Sweden from the 50's where wooden details such as e.g. doors are entirely intact. Apart from the wood, walls are painted white to reflect light and provide a neutral base for colors which are added on details such as cabinet covers and chairs, plus all the children's clothes and accessories.

I got the question; why a green building? The simple answer is that it could be any color actually, yet green was where it landed. The old areas around the site are all colorful, primarily in earthy tones or dull pastels. Right behind the site one finds two areas with brick buildings, one in light yellow typical for Gothenburg, the other in rusty red. When I saw both of those areas I was reminded of several buildings where you see the same brick colors, but with green details showing that green is a color which will accompany the existing buildings rather than fight for the attention. Also, the

planned stripe of new blocks along the east side of the site shows buildings in black and white, very common colors in new projects today. The desire was to dare to use a color and add something to the area, rather than just continue the white, black and grey we so often see.

Figure 8.

Figure 9.

Sustainability

Sustainability is a common word today. When I think about sustainability within architecture, I consider the most sustainable buildings the ones which are still intact and loved by people even though 50-100 years have passed. It is an architectural sustainability which tends to get lost in the discussion of less glass and more solar panels. Therefore, the aim was to create a building which will last without losing its quality, where materials will age with dignity and where the space can still be loved 50 years from now. If this was achieved or not, is hard to say at the moment.

The choice of wooden boards on the exterior was raised as a problem during the final seminar, because they tend to get destroyed in the ends. That is one reason why not to use plywood, but rather another type of wooden board with fewer and thicker layers which better withstands the weather conditions (TräGuiden 2003). Also, to cover the boards in paint increases the durability (TräGuiden 2003). An alternative to the boards could be to use a traditional vertical or horizontal wooden panel in-between the extruded bars. This would probably provide easier exchange if one plank would be destroyed compared to changing a whole board. It would change the appearance with another type of structure in-between the bars, something which the facade might benefit from.

The type of structural system was also an important part in the question of sustainability. As described earlier wood is a renewable resource, and this of course reduces the environmental cost of the school. The grid was planned to enable the change of room layout in-between load bearing walls, to try and incorporate a sort of flexibility as the sustainable thinking.

Another part is the roof which is covered in vegetation. Green roofs are good both for insulation, taking care of rainwater as well as CO_2 emissions from traffic. On top of it, it also provides surrounding buildings with a nature outlook, desirable in a city environment. With my background in healthcare architecture and the research presented there, I believe nature serves as a health promoting aspect and would consider that as long time sustainability to society if people stay healthy.

This leads us into social sustainability an area I think architecture is especially good at. And this thesis main focus has been social sustainability, by creating an environment where children can feel safe. A building with less bullying will reduce the stress among children, and better mental health during childhood will improve mental health as the children grow up (Magnér 2014). This will lay a good foundation for future generations, which society will benefit from 10-20 years from now. But then, long term perspective does not seem to be the way we count today, or?

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APPENDIX 1

Conversations by phone with Annika Westberg during spring 2016. Annika Westberg is working with school development at Halmstad municipality, Sweden.

How does it work in a classroom today? What is the teacher's role?

Today teaching is no longer transmission of knowledge as it used to be, the teacher is not supposed to just transfer knowledge from themselves to the students, but rather engage the students through conversations, thinking together, reasoning and have students collaborating and through these ways gain knowledge. The teacher's role is more supportive than before. A few years back it was common with individual work where students were supposed to be responsible for their own studies, but for some students who were weaker in their competence this was really hard and they did not always make it. The teacher has the biggest influence on children's learning. A lot of the new methods are really good but none of them can replace the teacher in the classroom.

It is important that there is material available for students to use and it should be stored in a level that young children can reach themselves. The material should be tempting and encourage children to dig into the work. Sometimes you see attempts of making interesting environments to provoke curiosity but then they become permanent and soon boring because no one has the energy to change them. Things has to be displayed, brought back and forth, in and out of cabinets to provoke curiosity among students. In a school it is very important that you SEE what is going on at the moment, as in "scaffolding" (look it up online) where teachers use the walls in their teaching. The surrounding should be used as a support or complement to the teaching. E.g. "look at the wall, this is what we are working on right now". Wall space is important.

One way of working is that the teacher starts off with an introduction to the whole class, then the students work in small groups and during the work the teacher take out 3-5 students at a time that might need some extra challenge, then they go back and another group is picked out.

Why do you consider the L-shape a good layout?

Several teachers have told me that they really like it since they can create smaller rooms within the room, so that different tasks can take place at the same time. If you, as the teacher, stand in the corner of the L you can separate students into the two "legs" and still have overview of the whole class.

What is important to consider in the school?

To have space for exhibitions is always good, but it has to be of importance for the students otherwise they will not look at it. Even though you design for exhibitions and the initial idea is really good, teachers might not have the energy to arrange them and then the space is not used anyway, so it is a balance.

There is a school in Båstad where the light inside makes you creative, try to achieve that! They use colors that encourages creativity and results in calmness. When you enter the school it feels a little bit like entering a paper store.

Think about what signals the environment tells the children; do they make the children wanna learn, or do they only make them wanna spend time there? E.g. think about the primary school in Oskarström, in one of the classrooms there was no thought at all behind how the chairs were placed. As a student you would ask yourself; should I work alone? together with others? Should I look forward? Or look into someone's neck? And then think about the classroom next to it, it was always in order, things were at their right place and you could sense a calmness in the room. And it was always possible to see what kind of teaching which was going on. It is like with young children and toys, they often start by dragging all of them out to play then it gets really messy and the children become irritated and no longer know how or what they

want to play. Then you tidy up, the children can see the things again and they stop arguing and want to go back and play. It is in the same way with learning environments.

Flexibility is also important. Many schools work in different ways, but it has become more common that you merge two classes and have more children but also more staff within one class. E.g. one year you might have two classes of 25 students each with one teacher per class, next year you have one class of 40 students with two teachers working together. This of course requires something new of the building where you during the first year need two similar classrooms and next year one larger and maybe one smaller where you could take out 1/3 or half the class by itself. Is it possible to maybe have movable walls? You do not have to change room sizes every week, but would it be possible to change on a yearly basis?

Consider how you place staff areas. When you arrive to one of the school I use to visit it is always empty, you can not find anyone. The staff room is placed too far away from the teachers' working place so when there is a lack of time they rather stay by their desk instead, they install a coffee machine there and never meet one another in the staff room. This easily creates small "schools within the school" a "you and them"

feeling and sometimes results in a segregated school with more conflicts. To separate it like this can be good if you have a very large school though. Another school have two rooms close to each other, where they use the small room as a staff room and the bigger one as a working space, it works out great.

Do schools use the corridors as working space for young children?

If necessary, yes. But other options are of course better. Children work a lot better in small groups, so spaces where you can accommodate smaller groups is very important. To have a lot of big open spaces has proven ineffective in many of the schools in Halmstad municipality, they are not in use and therefore an unnecessary space.

APPENDIX 2

Conversation with Charlotta Thodelius, PhD student at Chalmers University of Technology in Gothenburg, Sweden, the 24th of March 2016.

Charlotta Thodelius has a background within sociology and criminology and we discussed safety and bullying in school buildings. Here are some suggestions from Charlotta on what to look into in this master thesis.

- Make risk analysis: where will bullying appear? Where are the bullying corners? How do children move? Where will there be confrontations?

- Highlight that you are designing a work environment but for children. It is a very important topic!

- How will the building work from a child perspective? Children are very curious, they play a lot, empty and open spaces is very positive because children create when there is an empty space.

- Escape routes? How do you get out in case of an emergency? To provide several exit doors is important for security reasons but also to prevent confrontations between students.

- It is very good to have glass between rooms, but not so children can look out because they can get very stressed. It is important that staff can see who is knocking on the door before they open though (security reasons!). Important to not have glass everywhere to prevent "hey look, there is Billie, let's go get him" or similar behaviors.

- Do staff have overview and control over the entrance area: can they see who enters the building?

- Is there visual contact between the floors?

- Important to have a fence enclosing the school yard for safety.

APPENDIX 3

Study visit to teacher Ingela Bursjöö and her class of 8-9th graders at Johannebergsskolans Montessori in Gothenburg, Sweden, the 24th of February 2016.

What do you think one should consider in a new school?

Logistics within the classroom, how do you walk around? Like it is today all children have their own computers, they need to be charged and suddenly you have wires everywhere – dangerous because one can trip. To provide ergonomic chairs and tables for the children. Circular tables are good for group work, but it is great if they can be divided when there is a test.

Daylight! but being able to darken the room when necessary. And not have direct sun, it gets really warm. Ventilation is a big problem. Think about where to place printers because they contribute to the bad air quality and they are quite noisy so do not place them where students have to concentrate.

To have spaces where one can withdraw. To have light group rooms with daylight, with good ventilation and sound insulated walls. To have windows between classroom and group rooms as well as between classrooms and corridors, but make sure they are sound proof. Creating a home room where students belong (instead of changing rooms due to subject) is important since it creates safety and calmness among the students.

White is a great background color to mount things on the walls.

Include farming as a teaching method, it is really great if you can cultivate things on the school yard.

During the study visit a small survey was made among the students, since it was not as long ago since they attended lower school compared to myself. Questions asked were; what did you like about the school you went to? What do you think a school for small children should look like?

Students' answers

no gravel/asphalt
lots of plants & nature
grass, sandbox, playground

children's craft displayed on the walls
lots of books (scientific + novels)
rectangular + cirular tables
big windows
carpets in some of the rooms
no heavy doors
tables with computers
rooms that are cozy
water tap + cups
scattered power outlets
lots of color pens
colorful (happy colors)
locker for clothes
corridors adapted to children running
book shelves
+ *no* sharp turns
smart board

good ventilation
play room
sound insulation
dining hall
sound absorbing walls
pillow room
environmental materials
group rooms
child-friendly materials
dark resting-place
no sharp corners
large and open rooms
low furnishing
toilets close to classrooms

SAFE IN SCHOOL
when architecture tackles bullying

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