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U • N • F • O • L • D
Introducing autism-aware design principles in a mainstream school building project

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INTRODUCING AUTISM-AWARE DESIGN PRINCIPLES
IN A MAINSTREAM SCHOOL BUILDING PROJECT

ABSTRACT

We live in a world that is filled with all kinds of information coming from everywhere. We perceive this information through our senses, which help us to process it and interpret our surrounding environment. We meet people and exchange more information. We see, hear, feel, smell, we are continually aware of our surroundings.

What if our interpretation of what we perceive is different to others? What if we were overwhelmed by unfamiliar surrounding, by any change to a familiar surrounding or a simple conversation? Would it still be easy to perform every day activities? Most likely not. This is part of the everyday struggle of a person with autism. It is especially challenging for school children since they are only beginning to form their personalities along with coping with the everyday stresses and strains of school life.

One of the main goals of contemporary architecture is to create environmental conditions and a spatial atmosphere suitable for all. Using architectural and design tools, we are able to re-shape our surroundings and to cater for the special needs of children with autism. It is possible to lessen the difficulties they experience in the school environment, to improve their social skills, helping the children to fully discover their potential, to **UNFOLD** it.

This Master thesis elaborates on the topic of autism-aware design and provides an example of its incorporation in a primary and secondary school design project. This thesis starts with the general information about the condition (historical background, prevalence rates, causes and diagnostic methods), proceeds to the description of existing approaches for autism-aware design and, finally, introduces a conceptual design proposal for a public school building in Graz.

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1

CHAPTER

INTRODUCTION

1. INTRODUCTION

Today Autism is one of the most frequently diagnosed mental conditions. Its occurrence is independent of cultural, economic or social factors. Therefore, autism is almost equally spread in all countries regardless of their standard of living. Until now there is no known cure for the condition. Thus, a child diagnosed with autism will be affected by it throughout his or her life. However, the type and quality of treatment received can lessen the severity of its symptoms.

One of the main goals of the modern psychological treatment for autism is to assist people diagnosed with the condition to integrate into society and to be able to perform independently in all aspects of life. Yet, the issue of integration can be addressed not only by psychological means but also by the re-adjustment of the physical environment in the way how it reflects the special needs of people with autism.

Despite the fact that autism is a lifelong condition with ever rising rates, there is as yet no design requirements or building codes that would regulate the design process of public buildings in order to create a more positive environment for an autistic user. Some architects have already addressed this issue and several approaches to autism-aware design have been developed. However, as yet none of these methods have been confirmed as being strongly beneficial.

In Austria the importance of inclusion as part of the treatment of autism is especially emphasized. Almost every public school has children diagnosed with the condition who are studying together with mainstream students. This fact raises the importance for the development of special public school designs that would meet the special needs of all children regardless of their physical or mental abilities. Using autism-aware design tools in a mainstream school building makes it possible to reduce the level of everyday stress and anxiety and to help children with autism to have a more positive and fulfilling school experience.

The primary goal of this thesis is to address the issue of an inclusive autism-aware design in public schools and to make a first attempt at the incorporation of the autism-aware design principles into a local school design concept on the basis of an actual design task. At the beginning of this book a definition of the term autism will be given together with information about its historical background, prevalence rates, possible causes for the condition and the methods used to diagnose the condition. Later, the existing approaches for autism-aware design with building examples will be introduced. In the final chapters information about the current situation regarding autism in local schools will be given, followed by the proposal for the conceptual school design developed for one of the districts in Graz.

"Architecture is the science of environment creation, the manipulation of spatial organizations to fit the needs of its users."

Mostafa 2014, 143

CHAPTER 2

WHAT IS AUTISM ?

2. WHAT IS AUTISM ?

Defining Autism Spectrum Disorder (ASD)

"Autism can't define me. I define autism."

Kerry Magro[1]

In this chapter, the definition of Autism Spectrum Disorder (ASD) term will be given, followed by its historical background, types, overall prevalence rates, existing diagnostic methods, main struggles that people on the autistic spectrum are faced with and the possible causes for the phenomena. In conclusion, some of the existing organizations and the ongoing projects related to ASD will be covered.

2.1 WHAT IS ASD?

ASD is the accepted term used to describe a group of brain development disorders in an individual. ASD is a condition of heterogeneous character with symptoms vastly varying from one individual to another. This makes it extremely challenging to give a precise description of the condition and the consequent development of successful treatments. The only way to lessen this problem is to subdivide those diagnosed with ASD into smaller groups with overall similar behavior patterns.[2]

2.2 HISTORICAL BACKGROUND

At the beginning

When first used, the term Autism was described by psychological researches as a common stage in the mental development process of every child. It was mainly characterized by the ability of imaginary thinking which, according to specialists, some children could never outgrow. The first person to ever mention the term "Autismus" (Ger. Autism) was Eugen Bleuler who in 1911 used this word to describe one of the most severe symptoms of Schizophrenia where an individual would suppress ones negative feelings towards the surroundings by replacing them with fantasies and hallucinations.[3] In the period from 1960 to 1990 the term Autism went through several changes before reaching its modern meaning.[4]

Two most significant reports

In 1943 Leo Kanner wrote the first report on Autism describing 11 kids. Each had an outstanding level of intelligence but experienced severe problems in communicating with others and showed a tendency of re-

1 Kerry Magro: Autism Can't Define Me; I Define Autism, http://kerrymagro.com/autism-cant-define-me-i-define-autism/, 25.02.2018
2 See Torres et al. 2013, 13.
3 See Evans 2017,7-25.
4 See ibid, 187.

„Autism Spectrum Disorders are lifelong severe neurodevelopmental disorders with a considerable functional and financial impact on both the individual and their family"

Le Couteur 2011, 20

maining isolated. In this scientific paper, a wide spectrum of individual differences was clearly represented. However, according to Kanner only two characteristics were essential – "Autistic aloneness" and "Obsessive insistence on sameness".[5]
Almost at the same time (1944) an Austrian pediatrician and medical theorist Hans Asperger published his work on autistic psychopathy where he claimed that the evidence of autistic behavior could be only noticed starting from the age of 3 and only in boys. Having relatively similar characteristics comparing to Kanner's theory, the crucial difference is the normal and often increased intelligence level showed by kids examined.[6] Based on these two case reports, the concept of ASD was formulated by the English psychiatrist Lorna Wing in 1988.

And what is now?

As stated on the official web page of the American Psychiatric Association (APA), the fifth version of the Diagnostic and Statistical Manual of Mental Disorders (DSM) was issued in 2012. This guide book is broadly used in the USA and the rest of the world as a tool for diagnosis of mental disorders. The new edition provides a more accurate, and both medically and scientifically useful way of diagnosing individuals with the ASD condition.[7]

2.3 MAIN TYPES OF ASD

In accordance with the Diagnostic and Statistical Manual of Mental Disorders fourth edition (DSM 4), children diagnosed with autism were classified in one of the following sub-groups based on the symptoms:[8]

Autistic disorder (classical autism) – usually characterized with significant speech development delay, struggling with communication, many display intellectual disabilities.

Asperger syndrome – children with Asperger syndrome usually show no evidence of language or intellectual disability. In some cases, they display higher than average level of intelligence. However, they also suffer from an inability to socially interreact and unusual behaviors.

Pervasive Developmental disorder (PDD, also called atypical autism) – a type of ASD where the diagnosed could experience a combination of the symptoms of both conditions described above, usually less intense.[9]

Childhood Disintegrative Disorder (CDD)

This classification system was used until the fifth edition of Diagnostic and Statistical Manual of Mental Disorders fifth edition (DSM 5) was published.

5 See Frith 1992, 18.
6 See Walter 2008, 48.
7 See American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders (DSM–5), https://www.psychiatry.org/psychiatrists/practice/dsm, 21.12.2017
8 See Research Autism: Types of Autism, 25.10.2017, http://researchautism.net/conditions, 28.12.2017
9 See Autism Support of West Shore: Types of ASD, https://www.asws.org/WhatisAutism.aspx#types, 21.12.2017

" If you've met one person with autism, you've met one person with autism."

Autism Speaks, quoted after Stephen Shore

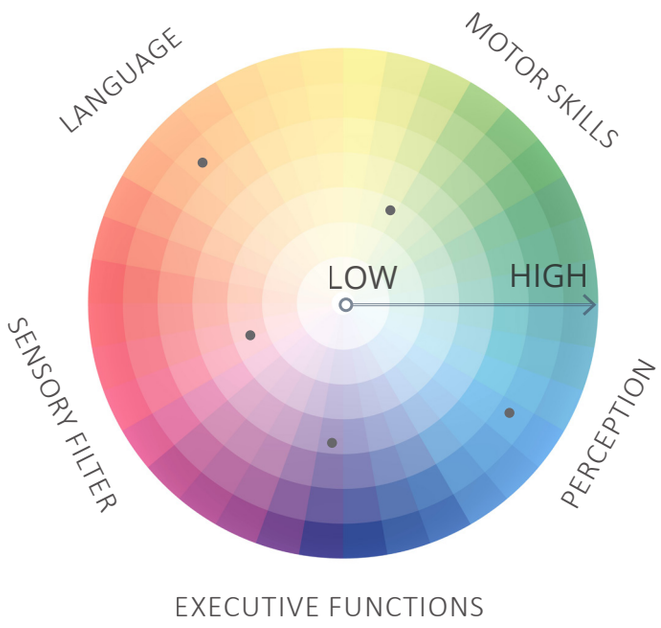


Figure 2.1: Understanding Autism Spectrum Disorder

According to the new version of the manual, autistic disorder, Asperger's disorder, and pervasive developmental disorder would be unified into autism spectrum disorder with individual characteristics noted through certain specifiers. This approach to classification helps to provide a more precise clinical description and develop a more individualized treatment method.[10] As showed in Figure 2.1. the diversity of ASD could be explained with a colour wheel. A person diagnosed with autism, while experiencing difficulties in certain areas, can perform with no difference to an average person in other areas. Each person diagnosed with ASD possesses a whole range of characteristics describing how the brain reacts when applying different skills. The colour wheel illustrates on how many levels a certain skill can be performed according to the brain reaction. Figure 2.1. shows an example of such an analyses. An examined person is able to have a conversation and enjoys interacting with other people. However, he or she could be easily overchallenged by sensory overloaded atmospheres (crowded places, too much closeness etc.) which makes it harder to perform the communication skill on the same level.[11]

2.4 AMOUNT OF PEOPLE AFFECTED

Previously considered as a rare disease ASD is now considered as a wide-spread condition affecting around 1% of the population.[12] In the most recently issued report of the Center for Disease Control and Prevention (CDC) 1 in 68 children is suffering from Autism and the amount of children diagnosed has doubled since 2000.[13] According to "Österreichische autistenhilfe", due to the absence of exact information on autism prevalence in Austria, the actual statistic could only be estimated with the help of international research papers. Based on this information, around 87.000 people in Austria are affected by ASD. This number includes approximately 48.500 children with a boy to girl ratio 4:1.[14]

2.5 DIAGNOSTIC METHODS

Today international diagnostic and classification systems are being used to diagnose ASD: DSM 5 (American Psychiatric Association) and ICD 10 (World Health Organization). These classifications are periodically updated using the latest research data which plays a crucial role in the diagnosis of an individual.

2.6 MAIN DIFFICULTIES

Children diagnosed with Autism generally experience difficulties when it comes to interaction with other people or expressing their emotional reaction both verbally and physically. In addition, autistic children often show an unpredictable reaction to different kinds of stimuli such as light, temperature and spatial surroundings. One of the most common characteristics of people diagnosed with ASD is a striving for order and very strict sequencing of activities. This sometimes leads to repetitive behavior patterns.[15]

10 See American Psychiatric Association(ed.) 2013, 31.
11 See Rebecca Burgess: Understanding The Spectrum, 15.11.2017, http://the-art-of-autism.com/understanding-the-spectrum-a-comic-strip-explanation/17.01.2017
12 See Centers for Disease Control and Prevention: Data & Statistics, 10.2017, https://www.cdc.gov/ncbddd/autism/data.html, 23.12.2017
13 See Christensen et al. 2016, 6.
14 See Dachverband Österreichische Autistenhilfe: Häufigkeit und Ursachen, https://www.autistenhilfe.at/was-ist-autismus/haeufigkeit-und-ursachen/, 2.12.2017
15 See Barthélémy et al. 2009, 5.

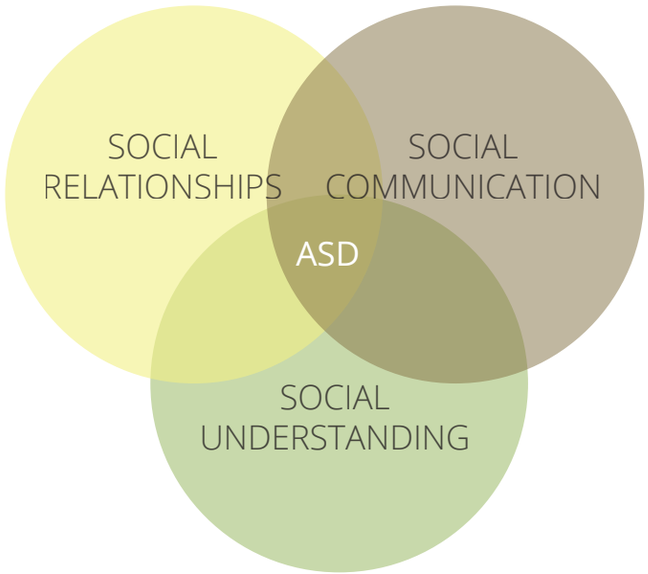


Figure 2.2: Triad of Impairments

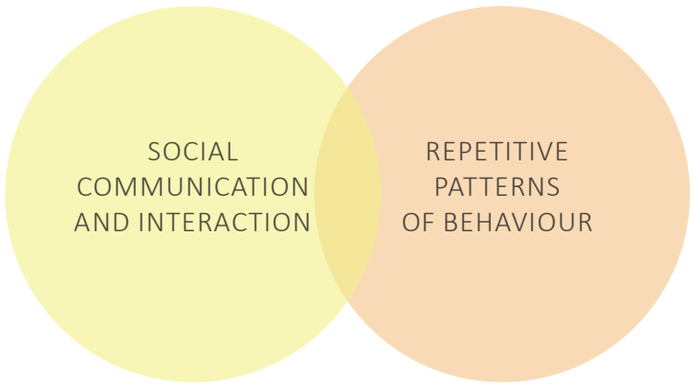


Figure 2.3: ASD Diagnostic Criteria according to DSM 5

First introduced by Lorna Wing and Judith Gould the triad of impairments described Autistic Spectrum as a combination of three main impairments - social interaction impairment, communication impairment and social imagination impairment or in other words experiencing difficulties in interpreting and understanding of other people's thoughts, feelings or actions.[16]
(Figure 2.2)

In DSM 5 this triad was revised and at the end replaced with a model consisting of two main difficulties- social communication and interaction, restrictive and repetitive patterns of behaviour and activities. These two areas of impairments are then evaluated with a level of severity. [17] (Figure 2.3)

2.7 CAUSES

Even today the exact causes for ASD remain unclear. However, several factors that could potentially be a cause of autism have been researched. These include biologic, genetic and environmental factors. It has been proved that siblings of children diagnosed with ASD are also likely to have the same condition. Genetic causes are typically connected with diagnosed chromosomal disorders which are not necessarily inherited.
Some researches considered environmental factors or consumption of certain medications as a possible cause for autism. However, there is no information proving the connection between ecological situation or vaccination during pregnancy and increased possibility of ASD.[18]

2.8 AUTISM RESEARCH AND SUPPORT INSTITUTIONS

International

TEACCH Autism Program - An association offering a wide range of programs developed for people with ASD of different ages. Additional attention is paid to development of programs to assist in the transition from school to employment – T-Step Program. Through emphasizing the skills necessary for studying this program assists students on the autistic spectrum to get enrolled and graduate from college. TEACCH provides various training programs and teaching materials available online or through personal consultation.[19]

ABA (Applied Behavior Analysis) – Currently one of the recognized treatment programs for autism. This program represents an approach to understanding behavior patterns of people with ASD and which factors affect them during the process of learning. The main goal is to address useful behavior, increase it and diminish harmful patterns in order to help people with ASD to live happy and fulfilling lifes.[20]

16 See Wing/Gould/Gillberg 2011, 768-769.
17 See American Psychiatric Association(ed.) 2013, 31.
18 See Landrigan 2010, 220-223.
19 See University of North Carolina at Chapel Hill School of Medicine: Our Mission and Vision, http://teacch.com/about-us/mission-st, 02.01.2018
20 See Autism Speaks: What is Autism, Applied Behavior Analysis (ABA), https://www.autismspeaks.org/what-autism/treatment/applied-behavior-analysis-aba, 02.01.2018

In Europe

EU-AIMS – European Autism Interventions is the largest autism research center and collaborates with institutions representing individuals affected by ASD. The main goal of the organization is to develop new approaches for more advanced treatments of people diagnosed with ASD and research in aid drugs for autism spectrum disorder.[21] One of the latest programs of EU-AIMS is LEAP – Longitudinal European Autism Project. The aim of this study is "to identify and validate stratification biomarkers for ASD".[22]

ASDEU – One of the ongoing autism-related projects within the EU. Autism Spectrum Disorders in Europe is a 3-year program founded by the European Commission in order to collect up-to-date statistical data on its prevalence, analyze treatment methods, study social and economic aspects with the help of 14 (including Medical University of Vienna, Austria) participating institutions throughout Europe. The goal of the program is to improve the prognosis for people with autism and quality of life.[23]

Autism-Europe – An international organization based in Brussels. The organization unites 26 States of the European Union. The main objective of this organization is to raise the awareness of autism and to bring the rights of people with Autism condition to the attention of the EU governments.[24]

In Austria

Dachverband Österreichische Autistenhilfe – The biggest organization in Austria that provides counseling, diagnostics and therapy for children and families affected by ASD. One of the main goals of the organization is the integration of people with autism in all areas of life.[25]

21 See EU-AIMS, https://www.eu-aims.eu/, 25.12.2017
22 Loth et al. 2017, 1.
23 See Autism Spectrum Disorders in Europe (ASDEU), http://asdeu.eu/, 25.12.2017
24 See Autism Europe: Who we are, http://www.autismeurope.org/who-we-are/, 18.12.2017
25 See Dachverband Österreichische Autistenhilfe:Wir über Uns, https://www.autistenhilfe.at/wir-ueber-uns/, 2.12.2017

CHAPTER 3

AUTISM-AWARE DESIGN

3. AUTISM-AWARE DESIGN

From theory to practical solutions

In this chapter, the necessity to consider the needs of children on the autistic spectrum in contemporary educational architectural projects will be discussed, if the question of integration of children with special needs in mainstream schools is important and which strategies are used for autism-aware design at present and the comparison of these strategies.

3.1 WHY IS IT IMPORTANT?

Even though the number of children diagnosed with ASD constantly grows, there are no special regulating design codes that consider the special needs of people with the autism condition. Multiple codes for school design covering different disabilities and learning difficulties do not include autism as a disorder. According to Associate professor Magda Mostafa this could be both a result of the „non-standard nature of challenges" as well as the different needs along the autistic spectrum.[1] School is a stressful period for most children. Additional personal difficulties such as the lack of social interaction skills or the inability to concentrate can make this experience for children with ASD even more challenging. This in turn creates additional challenges for teachers that could result in a negative impact on ones working conditions and in an overall reduced academic performance of the class.

What is the present situation in Austria?

According to the information provided by CIS (Community Integration Sonderpädagogik) most of the children with ASD are attending classes in general mainstream schools.[2] Regulations related to the education of children with autism are mostly concerned with the provision of special requirement needs or specialized education for teachers. Organizations like Autistenhilfe Österreich provide workshops for teachers and families. Their work includes explaining the phenomenon of autism and the struggles that each child diagnosed with this condition has to face on a daily basis. However, there are no existing guidelines for autism-aware design for schools or examples of such buildings.

As part of the work on this thesis, an interview with one of the primary school teachers in Graz who works in a mainstream class that incorporates several children diagnosed with different forms of Autism was conducted (see Appendix A). According to Mrs. G., despite the work of children psychologists, there is still a lot that could be done to improve the school experience for children with ASD. Most improvements could be made if consideration of the condition was

1 See Mostafa 2014, 143.

2 See Gerhard Tuschel/Judith Pannos/Brigitte Mörwald: Inclusion in Viennese Compulsory Education, 07.10.13, www.cisonline.at/fileadmin/kategorien/Broschuere_Integration__English.doc, 23.12.2017

“Children are not just small adults; they are especially vulnerable to environmental hazards. On a pound-for-pound basis, children breathe more air, drink more water, and eat more food than adults. Playing on floors, mouthing foreign objects, and getting dirty, they become intimate with environmental contaminants”.

Frumkin/Fox 2011, 217

taken into account at the design stage of a new school building. Unfortunately, unlike children with physical disabilities, needs of children with autism are normally overseen during the design process. Teachers often adjust the classroom layout themselves in order to improve the conditions of learning for children with ASD. Typical means are pictograms, color-coding, using supply rooms as a place for an autistic child to calm down. However, these adjustments are minor in character and cannot rectify the problems which arise from the school building and its overall organization.[3]

3.2 INCLUSION OR EXCLUSION?

Despite the fact that many children with ASD are capable of studying in a mainstream school, though experiencing certain inconveniences, some children require more attention and the special design of learning spaces is important.[4] There is an ongoing debate whether autistic children should be integrated into mainstream schools or if it is necessary to teach them separately in specialized schools.[5] There is no correct answer to this question as yet. However, if the main aim of treatment of children with ASD is to help them integrate into society and overcome social anxiety, then inclusion into mainstream schooling seems the more appropriate solution. This being the case, a school design which incorporates the needs of autistic children is very important.

An inclusive school design helps children with special needs to develop self-esteem, build strong personalities and overcome everyday issues with dignity.[6] Moreover children with special needs going to school with mainstream pupils creates a space for integration where mainstream students see acceptance and tolerance as a part of everyday life. This is of benefit to all children. [7]

3 See Interview with Mrs. G., conducted by Iana Totikashvili, Graz, 16.10.2017.
4 See Scott 2009, 36.
5 See Beaver 2011, 7.
6 See Hrekow/Clark/Gathorne-Hardy 2001, 15.
7 See Mcallister/Hadjri 2013, 57-59.

Figure 3.1: What is inclusion?

3.3 WHICH APPROACHES TO AUTISM-AWARE DESIGN EXIST?

Most recent studies into autism-aware design focus on the relationship between the sensory environment and autistic perception. However, there is no general agreement on this matter. Today architects and psychologists specializing in this field could be divided into two major groups which support principally different approaches when it comes to designing buildings for autistic users. There is an ongoing debate amongst researchers and architects as to which design approach is better and more effective in providing for the general needs and a positive study environment for the autistic person.[8] Today the two main approaches to autism-aware design are: the Sensory Design Theory and the Neuro-Typical design approach.

8 See Mostafa 2014, 144.

Figure 3.2: Students from Queen's University Belfast working on an ASD Classroom Design Kit

3.4 SENSORY ENVIRONMENT CONCEPT AND SENSORY DESIGN THEORY APPROACH

What is this?

Children diagnosed with ASD normally experience difficulties relaxing in any kind of surrounding. The school environment is considered particularly problematic in this regard. Being constantly distracted and overstimulated some children with ASD have a great difficulty in participating in the learning process.[9] Therefore, school environments must be designed with greater care, taking into consideration the difference in sensory perception of the environment by autistic children.
In 2009, according to the UK Government Building Bulletin 102 (BB102), "Designing for Disabled Children and Children with Special Educational Needs", a short list of design considerations for children with the autism condition was issued. It stated the importance of: "Simple layout: calm, ordered, low stimulus spaces, no confusing large spaces; indirect lighting, no glare, subdued colours; good acoustics, avoiding sudden/ background noise; robust materials, tamper-proof elements and concealed services; possibly H&S [health and safety] risk assessments; safe indoor and outdoor places for withdrawal and to calm down."[10]

Proponents:

These recommendations are broadly used by sensory sensitive approach supporters, such as James Vance & Associates Architects, Fletcher Thompson , GA Architects, Simon Humphreys and others. According to the Fletcher Thomson architectural office, an architect that designs for autism has to be prepared to turn common beliefs upside down in order to create a suitable environment for autistic users. They claim that the amount of direct daylight has to be limited in order to avoid additional distraction and visual stimulation. This, however, conflicts with general knowledge on how valuable day light is for overall health. Moreover, it does not seem to be applicable to mainstream schools that children with ASD attend. Other proponents of this design theory claim that day light is not the important factor in causing overstimulation but rather the high contrast between shadows and light as well as distracting outside views.[11]

Further development of the theory:

In 2014 the Associate Professor of The American University in Cairo, Magda Mostafa took this theory to the next level. Based on study results conducted in 2008 she issued a paper that describes how the Sensory De-

9 See McAllister/Maguire 2012, 201.
10 McAllister/ Maguire, quoted after Department for Education and Employment (DfEE) 2009, 199.
11 See Christopher N. Henry: Designing for Autism: Lighting,19.10.2011, https://www.archdaily.com/177293/designing-for-autism-lighting, 18.12.2017

SKIN – SENSE OF AIR

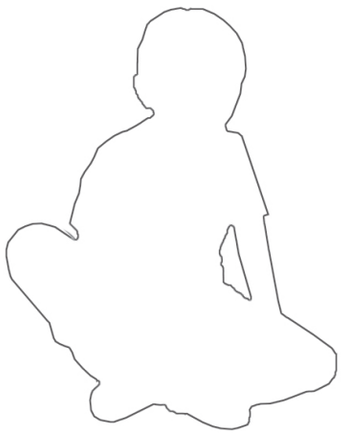
PASSIVE CONTACT STIMULI

Air movement
Temperature
Radiation
Humidity

VISION

DISTANT STIMULI

Shape and size
Ratios and colors
Space
Motion



HEARING

DISTANT STIMULI

Loudness
Pitch

SMELL

INHALED STIMULI

Spicy
Floral
Burned
Putrid

KINESTESIA

Position
Movement of body parts

HAPTIC

ACTIVE CONTACT STIMULI

Surface temperature
Roughness or softness
Hardness or softness
Contour identity

Figure 3.3: Ranges of the sences

sign Theory could be used to establish more positive behavioral patterns of autistic children through the adjustment of the sensory environment.
According to various studies, children with ASD are extremely vulnerable to external stimulations such as acoustics, color, texture, ventilation, and a sense of closure. In addition, almost every autistic user is faced with sensory malfunction, which often makes the reaction to certain environments completely unpredictable. Deeper observation of this phenomena led to the development of The Sensory Design Model that represents the relation between the senses, which are used to perceive physical environment and architectural attributes in a form of a matrix. (Figure 3.4.) Through analyzing the data collected from research groups it was possible to define the most commonly mentioned architectural attributes that affect the perception of a space by an autistic user most. The results are marked in the matrix with grey color.[12]

Since ASD is represented by a variety of symptoms it is important to understand that this matrix could be used only to customize individual designs but not for buildings that involve simultaneous interaction of groups of people diagnosed with ASD. However, through analyses of collected data it was possible to formulate the common challenges that typically every autistic user faces, which were consequently used to create ASPECTSS™ Design Index.

What is ASPECTSS™?

ASPECTSS™ Design Index is a summary of design criteria that needs to be considered when designing for the autistic user according to the Sensory Design Theory.

ASPECTSS™ includes:

- Acoustics – The most important criteria for design according to surveys.
- Spatial Sequencing – Organization of spaces in accordance with the daily routine of a user.
- Escape Space – Small scale spaces with no stimulation to escape sensory overload.
- Compartmentalization – Organization of spaces in smaller monofunctional groups. Minimization of open-space solutions.
- Transition Spaces – Provide a smooth crossing between compartments, a place that prepares the user to switch from one activity to another.
- Sensory Zoning – Division of the building not according to functions but to sensory levels and amount of stimulation.
- Safety – Easy accessible premises.[13]

The ASPECTSS™ Design Index will be often referred to in this Thesis at the stage of the design proposal.

12 See Mostafa, 2008, 203.
13 See Mostafa, 2015, 58-59.

			Sensory Issues														
			Auditory			Visual			Tactile			Olfactory			Proprioceptive		
			a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
ARCHITECTURAL ATTRIBUTE	Structure	A	1	2		1	2	1	2	1		1	2		2	1	1
		B	3	4	3	3	4								4	3	
		C	5	6	5	5	6	5	6	5					6	5	5
		D					7									7	7
		E	8			8										8	8
	Balance	F	9	10		9	10	9							9	10	9
		G					11									11	11
		H				12	13	13	12							13	13
		I				14	15	14							14		14
	Quality	J				17	16			18							
		K	19			19	20										
		L	**21**	**21**	**21**												
		M		22					22	23							
		N										24	25	24			
	Dynamic	O				**26**	**26**	**26**		**26**						**26**	**26**
		P				**27**		**27**								**27**	**27**
		Q	**28**			**28**		**28**								**28**	**28**

Figure 3.4: Sensory Design Matrix by Magda Mostafa

SENSORY ISSUES:

a. Hyper
b. Hypo
c. Interference

ARCHITECTURAL ATTRIBUTES:

A. Closure
B. Proportion
C. Scale
D. Orientation
E. Focus
F. Symmetry
G. Rhythm
H. Harmony
I. Balance
J. Color
K. Lightning
L. Acoustics
M. Texture
N. Ventilation
O. Sequence
P. Proximity
Q. Routine

The British architectural office GA Architects is one of the pioneers in autism-aware design. Being strongly involved in architectural research and design for autistic users, they developed several design guidelines for schools educating children with ASD.[14]

The main points according to Christopher Beaver (partner of GA Architects) that each architect should consider in his design in order to create an autism-friendly environment that contributes to a positive influence on the behavior are:

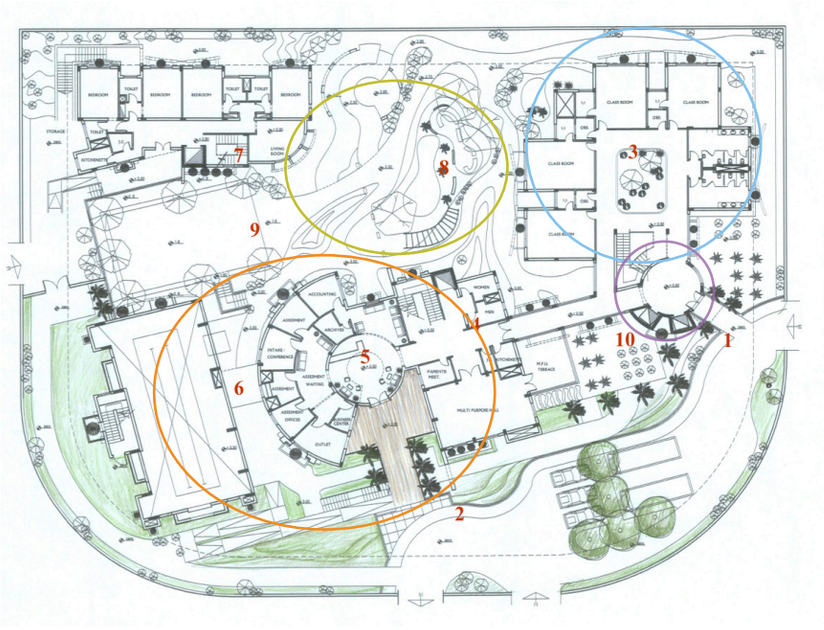
- Designing bigger circulation spaces instead of narrow corridors.
- Using color-coding and visual clues to simplify way-finding. It is important to use calming non-stimulating colors, especially in study rooms.
- Minimization of noise levels by using sound absorbing materials.
- Avoidance of light reflecting finishing materials, preference of natural material and textures.
- Replacement of direct artificial lighting with indirect lights in combination with inbuilt downlighters, controlled lightning with dimmers.
- No conventional radiators. Consider using ceiling heating through radiant panels built into the suspended ceiling.[15]
- Implementation of curved walls into the design to create a variety in room perception.
- Easy connection to outside areas that could be accessed by a child independently. [16]

14 See Beaver 2006, 4-6.
15 See Beaver 2012, 12-13.
16 See Beaver 2010, 77.

Sensory Design Theory in projects:

Name: Advance Special Needs Education Center
Location: Qattameya, Cairo
Architect: Progressive architects, Magda Mostafa

This is a project by Progressive Architects designed in collaboration with Magda Mostafa with application of the principles of the Sensory Design Theory. School premises are organized in groups according to the level of stimulation caused by the activity.These groups are connected by a transition zone that helps children to take a break from one type of activities and get ready for new tasks. (Figure 3.5)



PREMISES:

1. Student Entrance
2. Administration Entrance
3. Classrooms
4. Therapy rooms
5. Administration and Diagnostic
6. Hydrotherapy
7. Assisted Living
8. Sensory Garden
9. layfield
10. Gardening Centre

SESORY ARREAS:

- Low stimulus
- High stimulus
- Circulation
- Transitional Sensory Garden

Figure 3.5: Progressive Architects, Advanced Centre for Special Needs, Qattameya, Cairo, Egipt, 2007, Entry level plan showing different sensory areas

Name: Home for children with autism
Location: Hareskoven, Copenhagen
Architect: CREO Arkitekter and JAJA

Building located in a secluded area of one of the forests close to the capital of Denmark. Closeness to the nature affects the overall appearance of the building- various outside views, direct access to outdoor space. Semi-enclosed inner courtyards create the feeling of safety. Numerous niches help to soften the transition between outside and inside.

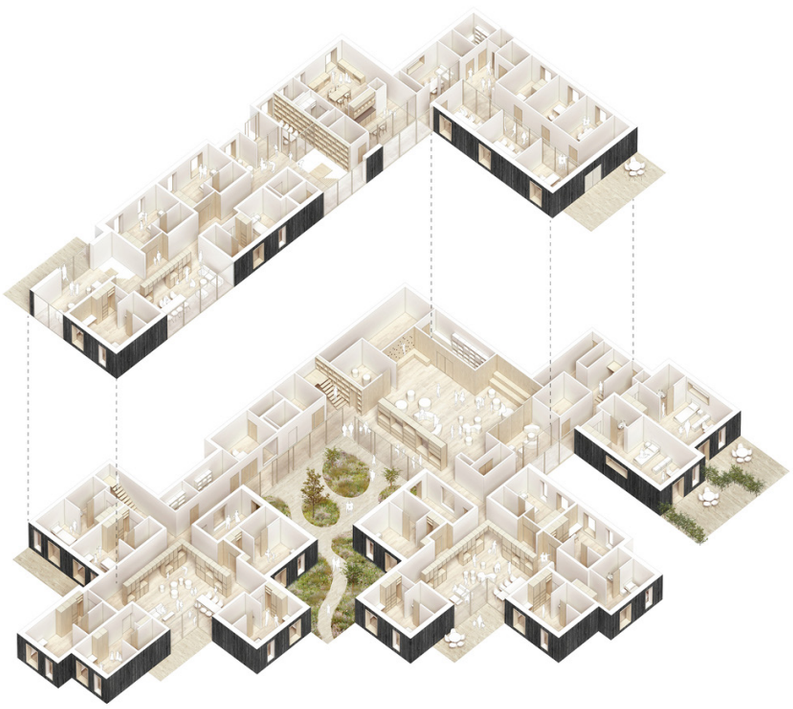


Figure 3.7: CREO ARKITEKTER A/S & JAJA Architects, Home for children with Autism, Copenhagen, 2018, Axo

Materials and colors:

Preference of natural materials and textures. No reflecting surfaces of finishes. Usage of sound absorbing materials in retreat areas in order to reduce the background noise.

Use of calm, low saturation colors in combination with a sufficient amount of day light in order to avoid additional visual stimulation.

Figure 3.8: CREO ARKITEKTER A/S & JAJA Architects, Home for children with Autism, Copenhagen, 2018, Entrance area

Name: Respite Building
Location: Langley Mill, Nottingham
Architect: GA Architects

Transitions are designed as circulation spaces instead of corridors. Bright wide spaces are used to avoid the feeling of too much closeness. Users move freely without having too much of physical contact with one another. No monotonous corridors, division into zones with visual hints aimed to ease navigation in the building. The circulation space "flows" between functions, eliminating running opportunities and creating a more elaborated environment for socializing or being alone.

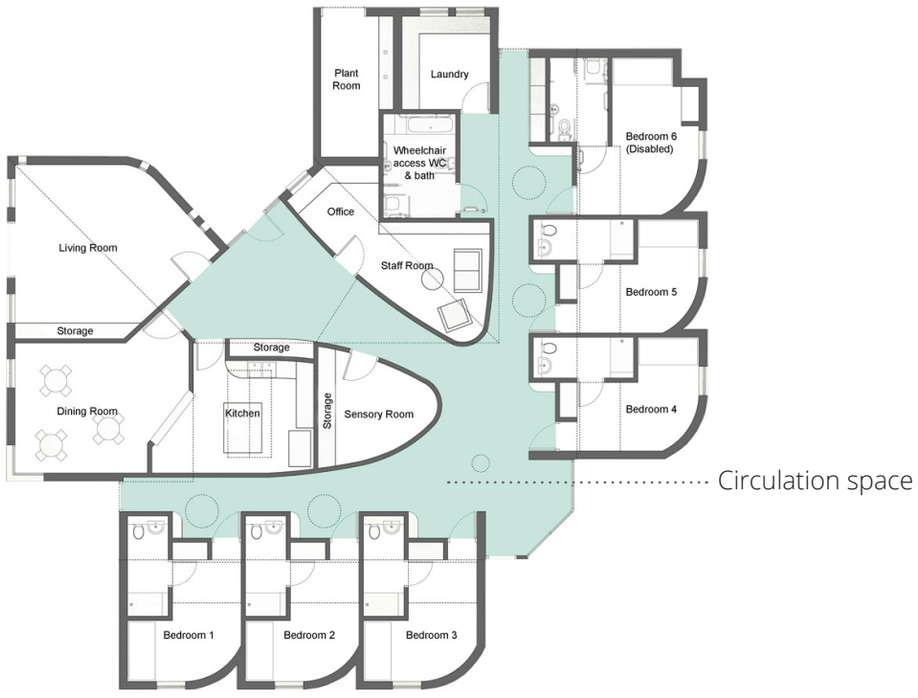


Figure 3.9: GA Architects,Respite Building, Langley Mill Nottingham, 2010, Ground floor

Benefits of the design approach:

People use their senses to perceive and analyze their surroundings. Consequently, people who experience difficulties dealing with a stimulating atmosphere find themselves under constant pressure and often feel overwhelmed by the surroundings. Through numerous research and empirical investigations it was proven, that people diagnosed with ASD tend to perceive the surroundings differently, which makes it extremely important to consider it when designing buildings for autistic users. The aim of the Sensory Design approach is to create positive environments that would benefit the needs of all users.[17]

Building designs based on the Sensory design approach allow adjustments to be made according to the individual needs of autistic users of all levels from mild to extreme forms of ASD.[18]

Critique:

According to a specialist in autism design, Christopher Henry, there was not a coherency in results over all the research groups who participated in the Sensory Design study. Moreover, the results of the studies conducted vary dramatically from individual to individual making it difficult to unify the design methods.[19] Another important consideration is that sensory environments limit children with ASD in obtaining generalization skills. As a result, children that adopted certain skills in a specially designed environment cannot apply them in a different situation, even if the difference is insignificant. This could lead to a decline of successful integration rates.

17 See Dunn/Little 2015, 26-29.
18 See Mostafa 2014, 145
19 See Henry 2015, 55-56

3.5 NEURO-TYPICAL DESIGN APPROACH

What is this?

The less popular and less investigated Neuro-typical approach differs in its philosophy to the Sensory Design Theory. Based on the main idea of autistic children lacking in generalization skills, this theory claims that creating neuro-typical (close to real life) environments can help children with autism to accommodate better to everyday life situations and increase their level of independency. Generally, the advocates of the Neuro-typical design approach accept the sensory difficulties that individuals on autism spectrum experience. However, they believe that due to the lack of generalization skills obtained, sensitive environments are unhelpful when it comes to applying obtained behavior patterns in a real-world setting.[20] For instance, if a child learns how to use a private bathroom in a residential building it is highly likely that he or she won't be able to use the facilities in a public rest room. The reason for this is that an individual with autism often perceives a different setting of the same function as a completely different environment. Therefore, the proponents of the Neuro-Typical design method consider this approach to be more practical and beneficial in the long term for the individuals. [21]

Proponents:

The specialists from USA Architects office strongly believe that school buildings designed using the Neuro-Typical approach provide a smooth and "less intimidating" transition between an educational institution and the outside environment. In the design process of the Developmental Learning Center (DLC) in Warren, New Jersey, architects tried to imitate the scenes of real life situations.

The main school hallway resembles a typical downtown street with store facades representing different institutions like banks, shops, hairdressers etc. (Fig. 3.11). The school canteen simulates the interior design of a typical diner allowing the students not only to have a meal but also to engage in social interaction. (Fig. 3.12) [22]

20 See Christopher Henry: Designing for Autism: The 'Neuro-Typical' Approach,3.11.2011, https://www.archdaily.com/181402/designing-for-autism-the-neuro-typical-approach/, 18.12.2017

21 See Henry 2015, 57-58

22 See USA Architects, http://www.usaarchitects.com/project/developmental-learning-center, 27.12.2017

Neuro-Typical design approach in projects:

Name: Developmental Learning Center (DLC)
Location: Warren, Michigan
Architect: USA Architects

Figure 3.10: USA Architects, Morris-Union Jointure Commission's (MUJC) Developmental Learning Center (DLC), 2007, Hallway "Main street"

Figure 3.11: USA Architects, Morris-Union Jointure Commission's (MUJC) Developmental Learning Center (DLC), 2007, School canteen „Diner"

Name: St. Coletta
Location: Washington D.C
Architect: Michael Graves

St. Coletta is a school for special needs focused on education of children with multiple disabilities as well as autism. Individuality of the building volume is also represented in the floor plans. Bright high contrast colors and relatively complicated shapes of the blocks help to distinguish between the campus departments both from out-side and inside.[23]

Figure 3.12: Michael Graves, St.Coletta School exterior view. Shapes of the buildings resemble school's logo.

23 See Michael Graves Archiecture&Design: St. Coletta of Greater Washington, https://michaelgraves.com/portfolio/st-coletta-school/,6.02.2018

Figure 3.13: Michael Graves, Interior spaces of St.Coletta School. Contrasting colours of the circulation area and a learning space.

Benefits of the approach:

The Neuro-Typical design approach simulating typical environments helps people with ASD to adjust and feel confident in various outside of school situations. One of the most important aspects for better integration is the ability to perform every day actions independently.

Critique:

One main criticism of the Neuro-Typical design approach is that an individual is assumed to possess a skill which he or she may not have. Children diagnosed with ASD have to learn a skill before they can generalize it. This fact makes neuro-typical environments unsuitable for those diagnosed with severe cases of the disorder.[24] In addition, some critics claim that most of the environments fail to work properly even for an average person. So, replicating these environments in educational institutions could harm both mainstream as well as autistic users.[25]

24 See Mostafa 2014, 145.
25 See Henry 2015, 59-60.

3.6 COMPARISON OF BOTH DESIGN APPROACHES AND CONCLUSION

Both design methods have legitimate philosophy behind them. One of the main differences is the approach to understanding which of the characteristics of autism is the most crucial one for building design. Sensory design theory proponents claim that the unique sensory perception of children diagnosed with ASD should be seen as a key factor when designing for autistic users. On the other hand, Neuro-Typical design approach protagonists, whereas not denying the importance of sensory reaction, focus the design effort on the social integration through learning in close to real-world environments.

Despite the fact that the Sensory Design Theory seems to be more accepted by psychologists, neither of these approaches is considered better than the other. Since both theories are relatively new, no long-term study results of the children who attended different school types are available. It is not possible to say with scientific certainty which of the approaches, if any, has long-term benefits for the children with ASD.

Although these two design theories have different philosophies there are certain elements which are not necessarily in conflict with one another. Therefore, it might be possible that a partial combination of both design models could be an answer to the two major problems that children with ASD face while attending a school – sensory malfunction and lack of generalization skills.[26]

For example, specially designed exterior spaces in a school project could be considered as a design element that represents a merger of the two concepts. On the one hand, outside space, due to its characteristics, provides a variety of unpredictable scenarios that can simulate everyday life as well as an opportunity for occupational therapy and in this way, contribute to the generalization skill process. On the other hand, the close presence of nature is an important part of therapy for children with ASD where kids get an opportunity to obtain basic global understanding of the surrounding world.[27]

26 See Pomana, 2015, 5.

27 see Andrei Pomana: Architectural Design for Autism, https://architectureforautism.wordpress.com/autism/causes/, 30.11.2017

CHAPTER 4

CASE STUDY

4. CASE STUDY
Leopoldinum and "Smart City"

To apply the theoretical information discussed in the previous chapters it was important to take a real public school in Graz as an example in order to access the current situation regarding the education of children with ASD. In this chapter, a closer look at the situation in one of the local schools in Graz will be taken.

4.1 LEOPOLDINUM PRIMARY SCHOOL

Leopoldinum is a public primary school situated in the Eggenberg district of Graz. Its facilities are located in two buildings: the main building is situated on Alte poststraße and the other one is on Algersdorferstraße. Like all primary schools the main focus is to provide a general education for all students. Since many students in attendance have different cultural backgrounds, a large emphasis is placed on integration. Like many other public schools in Austria, Leopoldinum also provides education for children with ASD and other special needs. The school has eight classes with a total amount of 140 children. Even though the school building is small in size, Leopoldinum offers a range of subjects including numerous language classes, sport lessons and an all-day school area.[1]

Interview (see Appendix A)

While working on this Thesis an interview with one of the teachers of Leopoldinum was conducted. The aim of this interview was to find out what is the current situation as regards the education of children diagnosed with ASD in Austria and specifically in Graz, and what steps could be undertaken to improve its quality.

Mrs. G. currently teaches in one of the integration classes at the Leopoldinum primary school. Her field of specialization is primary school education with an emphasis on the education of children with special needs. Additionally, she has successfully completed an advanced training program for teaching children with ASD and other mental impairments. Children diagnosed with ASD attend Leopoldinum on a regular basis. In a class of 25 children, the number of pupils with ASD condition is around three.

1 See Volksschule Leopoldinum: Über uns, http://www.vs-leopoldinum.at/index.php?page=unsere-schule-stellt-sich-vor, 28.12.2017

Figure 4.1: Leopoldinum view from Alte Poststraße

Figure 4.2: Leopoldinum courtyard view

How are children with ASD taken care of?

According to Mrs. G., since children with ASD are not the main priority of the school management, the specific needs of these children are sometimes overlooked. There is a need for more teacher training and a better school infrastructure would be of benefit. At present, teachers have to adjust the learning environment themselves so that it becomes more suitable for every student. However, there is no overall school strategy in this area of education. To make the study experience more positive and effective for all children as well as to ease the working stress for teachers it is important that the classes take place in the environment that meets the special needs of every student. In her interview Mrs. G. points out that teachers only have the possibility to re-adjust the learning environment at classroom level only. Due to the configuration of the building some children with ASD require constant supervision when they are not in class.

What are the most important aspects to consider when working with children on spectrum?

According to Mrs. G. a clear room structure organization in accordance with the daily routine is of a great importance. It makes it much easier to work with an autistic student when he or she has an understanding of what awaits him or her during the class. Another important aspect is visual assistance in the pathfinding in order to ease navigation through the building. Important rooms such as rest rooms have to be clearly defined or marked so that children can easily find them without the extra assistance of their teacher.

Would it be beneficial if the building already included some of those functions necessary to comply with the special needs of children diagnosed with ASD? Mrs. G. has no doubt that it would.[2]

What is the future for Leopoldinum?

Leopoldinum primary school is at the moment located in an old building that unfortunately does not comply anymore with contemporary school requirements. In the near future it is planned to move the school facilities to the new school premises which will be a part of a new large urban development “Smart City” in Graz. In the following paragraphs, a brief description of the “Smart City” project and its goals is given.

2 Interview with Mrs. G, conducted by Iana Totikashvili, Graz, 16.10.2018.

Figure 4.3: Leopoldinum playground

Figure 4.4: Leopoldinum entrance area

Figure 4.5: Leopoldinum classroom view

Figure 4.6: Leopoldinum school. Supply room for Teachers. Also used sometimes as a retreat area for overstimulated children with ASD

4.2 SMART CITY PROJECT

In 2013, with the help of a consortium consisting of 14 partners and led by the city council of Graz, a competition for the conceptual development of a Graz city quarter of almost 400-hectares was initiated. „Smart City“ is an idea for the city of the future where all the modern technologies are available and the latest trends in city planning are implemented. The main goal of the project is to demonstrate that in the world of contemporary architecture it is possible to build with efficient and resource-saving methods and at the same time to provide living spaces of the highest possible standards with reduced to zero emissions.[3]

Due to the size of the future development, several competitions, taking different parts of the area for further elaborating, were organized. The results of the extensive work of the participants were published in autumn 2014.[4]

In order to understand the character of the future area, a brief description of the competitions cunducted for the new development and the winning proposals is given in this paragraph.

3 See Stadt Graz: Smart City Waagner Biro, www.graz.at/cms/beitrag/10191841/8119940/Smart_City_Waagner_Biro.html, 03.01.2018
4 See ibid.

Figure 4.7: Smart City Graz development area

Figure 4.8: Smart City Graz competition area

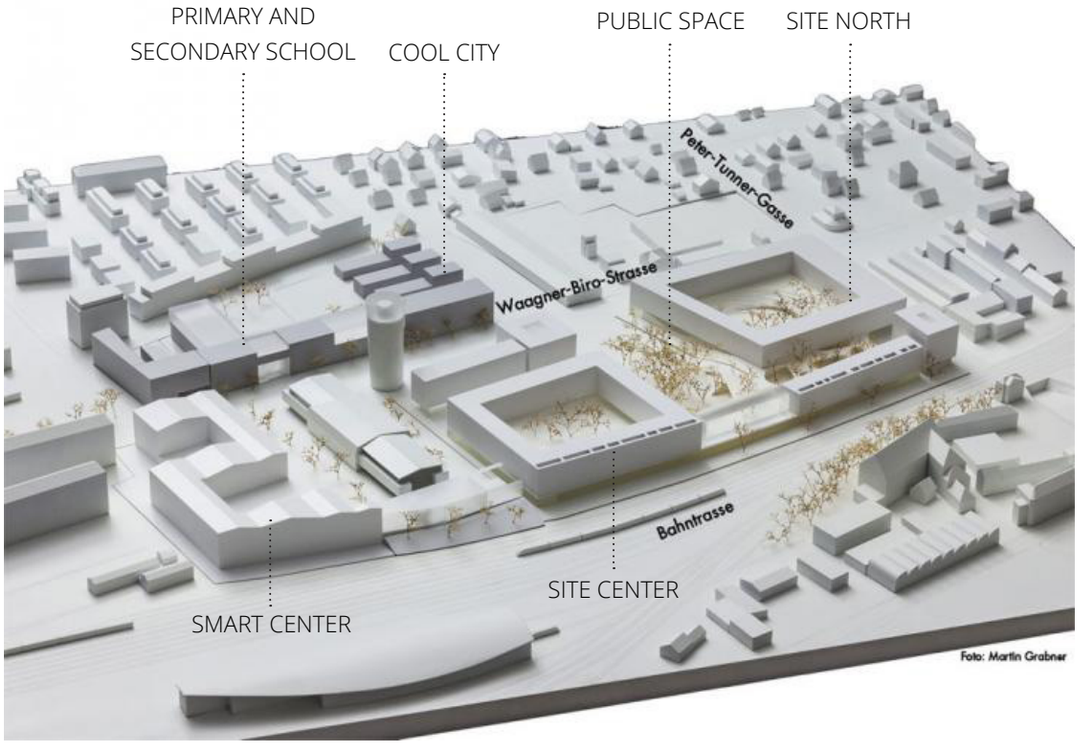


Figure 4.9: Physical model of results of competitions. Photo: Martin Grabner

Urban planning competition. Site Center and North:

The urban planning competition for ideas for site North and Center of the "Smart City" development was won by Nussmüller Architecten ZT-GmbH. The architectural entry represents a „flowing landscape" that connects building volumes, providing green inner spaces and creating links between different half-open and open areas. All residential units are designed to either have a direct access or views of the green area and are designed as high quality living spaces.[5]

Figure 4.10: Competition entry perspective view. Image: Nussmüller Architekten

5 See Smart City Graz:Erste Wettbewerbsergebnisse liegen vor, http://www.smartcitygraz.at/moretext-news-5-wettbewerbsergebnisse/, 2.01.2018

Competition "Smart Center":

Almost simultaneously another competition "Smart Center" for the construction site South was carried out. The main focus for participants this time was a more detailed development of a residential quarter combined with local amenities and services. The winning proposal was submitted by the architectural office PENTAPLAN GmbH, Graz. The architects found inspiration in former industrial buildings that were previously located in this area.

The new residential blocks have the same saddle roof shape. Facades facing north and south are designed as stacked containers providing spaces for workshops and storage areas and reflect the former industrial halls structure. The building block has a green roof with roof gardens for rent.[6]

Figure 4.11: Competition entry perspective view. Image: PENTAPLAN

6 see ibid.

Competition "Cool City":

Later in 2015 two further competitions were conducted. The first one – Cool City was a competition to reorganize the existing buildings into a new vibrant area that includes a student dormitory, blocks of flats, shops and food services. The winning proposal was developed by the Architect DI Georg Eder.

In this entry, all the functions were distributed in four minimalistic building volumes that create numerous semi-public and public spaces adding extra spatial quality to the area characterized by a relatively high building density [7]

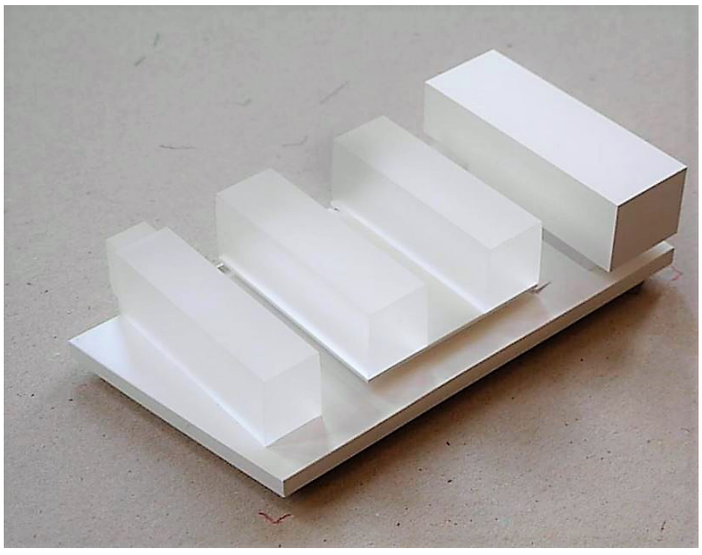


Figure 4.13: Cool City physical model, Arch. DI Georg Eder, Photo: Architekt DI Dr. Roland Heyszl

7 See Redaktion GAT GrazArchitekturTäglich: Cool City – Waagner-Biro-Straße, 06.05.2016 http://www.gat.st/news/cool-city-waagner-biro-strasse,5.01.2018

Figure 4.14: ”Cool City”. Visualization: Architekt Georg Eder

Competition School campus:

The second competition carried out in August 2015 was an EU-wide open two-phased competition to design a new school campus development. The new school building would include both primary and secondary schools and provide study places for around 700 students. There were a total 74 submissions in the first round, and 10 submissions were selected for the second competition stage. The jury voted unanimously for the design proposal made by the architect MSc Alexa Zahn whose architectural office is located in Vienna.[8]

After deliberation the jury came to the conclusion that this entry fulfilled the requirements of the design task best and took into account the emphasis on urban technologies, ecology and sustainability introduced in the overall "Smart City" development. Spacious outside areas play an important role in this design as they allow a flexible multipurpose use and can be also accessed by the public during non-school hours.[9]

Figure 4.15: School campus Smart City Graz Waagner Biro. Visualization: Alexa Zahn

8 See Smart City Graz: Erste Wettbewerbsergebnisse liegen vor, http://www.smartcitygraz.at/moretext-news-5-wettbewerbsergebnisse/, 2.01.2018
9 See Redaktion GAT GrazArchitekturTäglich: VS und NMS Smart City Graz, 5.12.2015, http://www.gat.st/en/news/vs-und-nms-smart-city-graz, 4.01.2018

Competition for public spaces:

The last competition organized by the City Graz for the area was for a design proposal for public spaces that according to the overall Smart-City concept will play an important role in the new development. In accordance with the design task, the main focus was given to spacious pedestrian zones. The first prize was shared by two architectural projects from Graz, one submitted by the collaboration of Umweltconsulting ZT GmbH and the architectural firm DI Josef Hohensinn, and the other one submitted by two architects DI Mag. Thomas Pilz and DI Christoph Schwarz. The project will be further developed by the City Graz with the help of investors, landowners and citizens.[10]

Figure 4.16: Smart City, competition for public spaces, Visualization: Umweltconsulting ZT GmbH + Hohensinn Architectur

10 See Smart City Graz: Ideenwettbewerb zur Gestaltung des öffentlichen Raumes, http://www.smartcitygraz.at/moretext-news_ideenwettbewerb-oeffentlicher-raum/, 2.01.2018

4.3 ANALYSIS OF THE SMART-CITY SCHOOL DESIGN PROPOSAL FROM THE POINT OF VIEW OF AUTISM-AWARE DESIGN

Leopoldinum school is scheduled to move its facilities to the new school campus in the Smart City in autumn 2018. Children who at present attend Leopoldinum will most likely attend the new school, thus it is important to take their needs into account as well. Therefore, it is interesting to take a closer look at how this new school building works for children who are diagnosed with ASD.

It is especially important to incorporate an autism-aware design approach for new school buildings at the planning stage as there is an upward trend in the numbers of people diagnosed with the autism condition.

The competition winning entry is a well-functioning modern school design, Smart City school campus provides a wide range of study possibilities and areas for free time activities for a mainstream student. The building configuration is easy to read and there is no problem in pathfinding.

However, the long corridors could be quite challenging for some children with ASD since they could easily get overwhelmed from being forced into getting too close in contact with other students in these areas. It would have been more beneficial if transit zones were designed as more generous circulation spaces.

The new school campus provides great direct connections to outside terraces with the possibility for outside activities and plant cultivation.

Smart City school building has a classical distribution of spaces by function. It does not take into consideration the amount of mental stimulation in each area. Moreover, due to the compact volume of the building it is not possible to create transitions between areas with different level of stimulation. Thus, some spaces while having different stimulation levels are mixed. This solution could also be seen as problematic for children on ASD. .

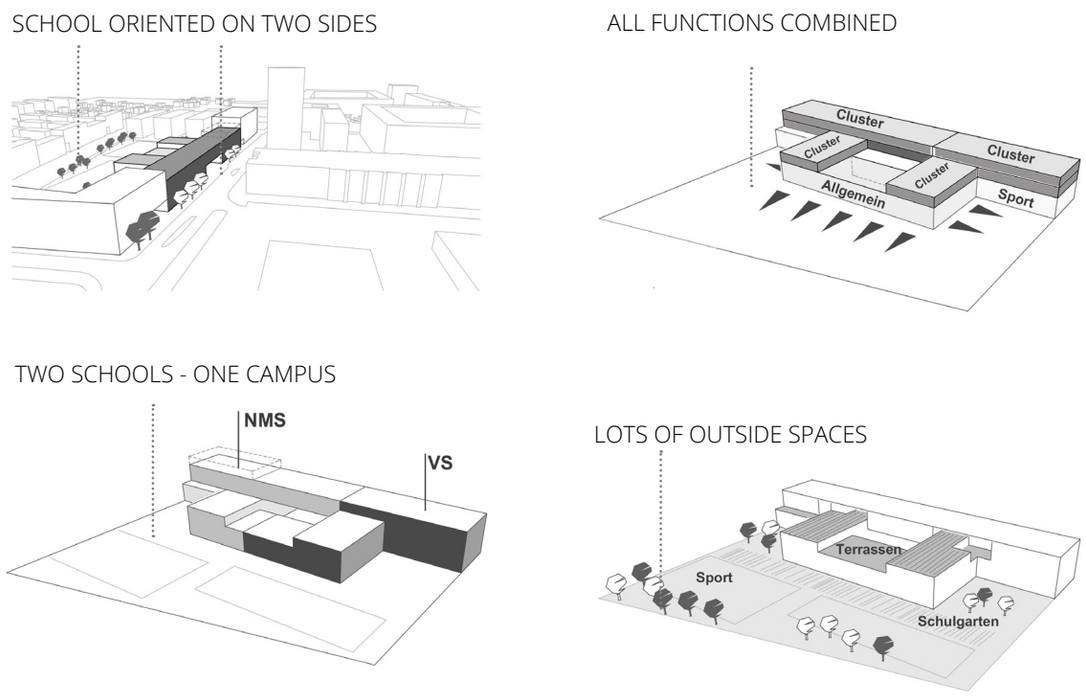


Figure 4.17: School campus Smart City Graz Waagner Biro. Concept

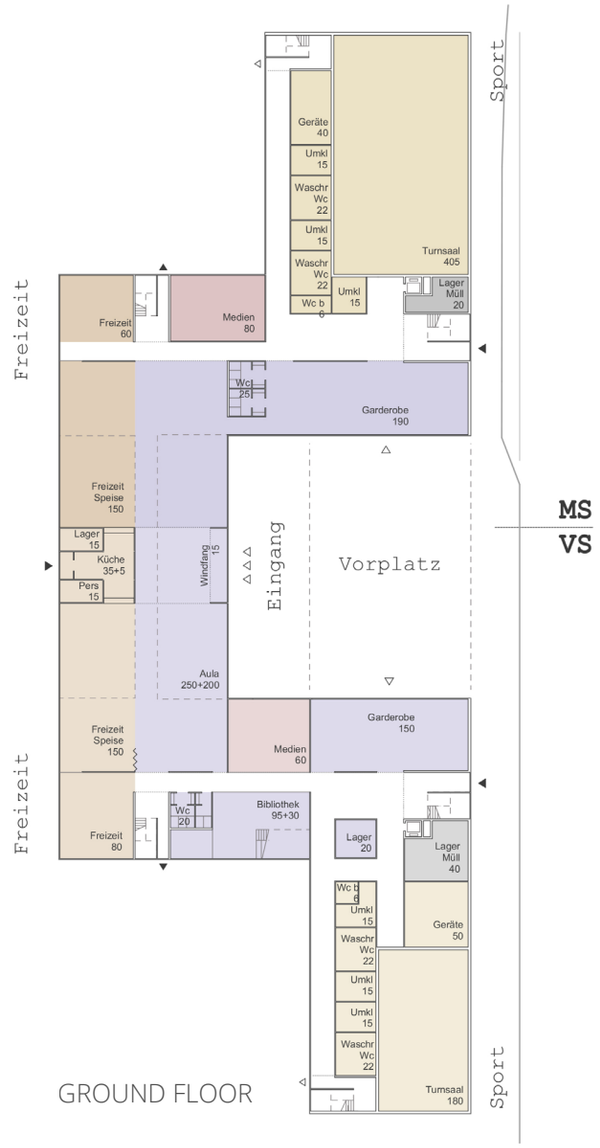


Figure 4.18: School campus Smart City Graz Waagner Biro Ground floor

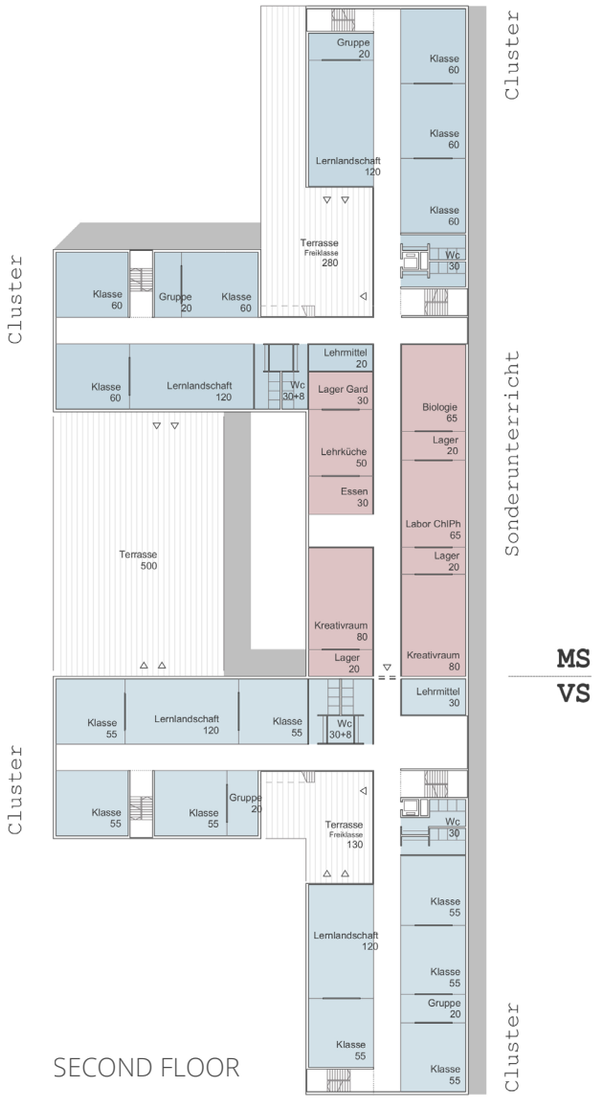


Figure 4.19: School campus Smart City Graz Waagner Biro Second floor

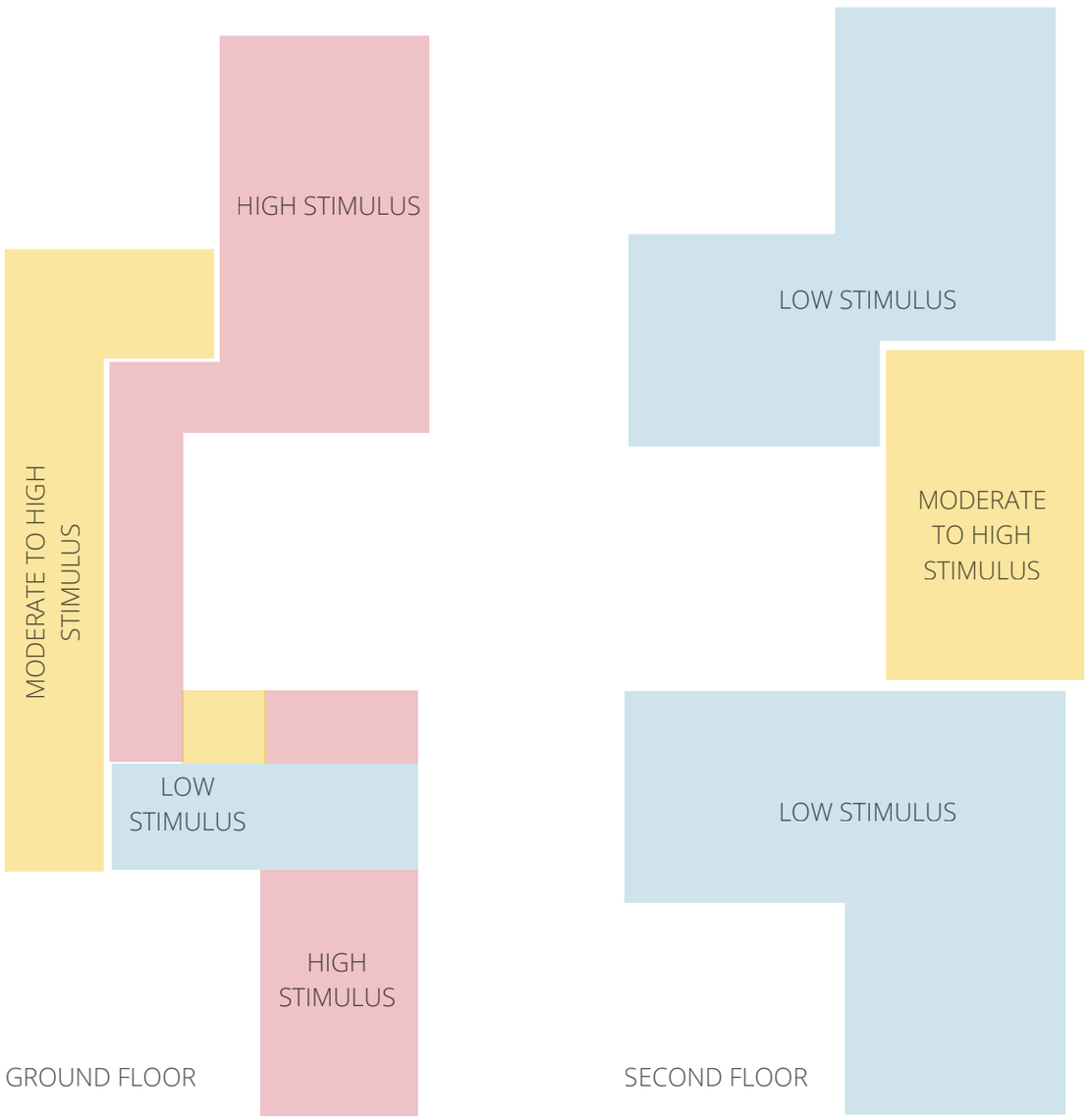


Figure 4.20: Groups of the school premises defined according to the level of stimulation

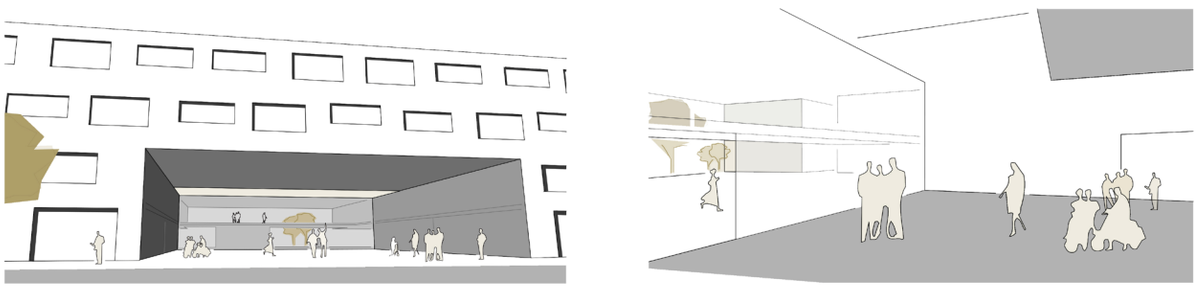


Figure 4.21: School campus Smart City Graz Waagner Biro, School campus sketches, entrance area

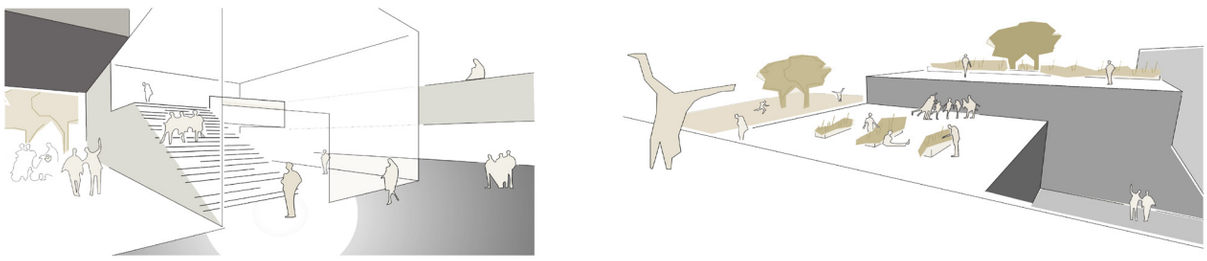


Figure 4.22: School campus Smart City Graz Waagner Biro, School campus sketches. Free time area, outside space

4.4 CONCLUSION

Smart City school campus is designed to modern school standards and provides all the necessary spaces for a high quality learning environment. However, it lacks design solutions that benefit not only mainstream users but also users with ASD condition.

During the further work on this thesis a new design proposal will be developed for the same area and with the same design task but also incorporating autism-aware design principles.

CHAPTER 5

SITE ANALYSIS

5. SITE ANALYSIS
Characteristics of Lend district

In this chapter a brief analysis of the site for the future school building is made. The information given below includes the population situation in the district, transport connections and open space facilities. A brief description of the most important buildings surrounding the proposed site is also provided.

5.1 POPULATION

The proposed site for the future school development is located in the IV district of Graz – Lend. (Fig. 5.1)
Over the last number of years this area has developed into a new trendy quarter of Graz. Various facilities which can be used for designer shops or workshops attract many young people and artists. The current population of Lend district is around 35 500.[1]

According to Stadt Graz – BürgerInnenamt "Graz in Zahlen 2017" report,[2] district Lend is one of the most populated areas in Graz, mostly due to its location (only 2 km from the city center) and a wide range of public services. In addition, prices for real estate property and rental accommodation are lower on average compared to other districts. According to the population prognosis for 2031 the number of people living in the area will continue to grow. (Fig.5.2) Moreover, Lend district is also characterized by the highest number of children of school-age. (Fig. 5.3)

1 See Stadt Graz: Zahlen + Fakten: Bevölkerung, Bezirke, Wirtschaft, Geografie, http://www1.graz.at/statistik/Bev%C3%B6lkerung/Bezirksauswertungen/Bezirk_final_04.pdf, 08.02.2018
2 See Magistrat Graz - Präsidialabteilung Referat für Statistik 2017, 14-15.

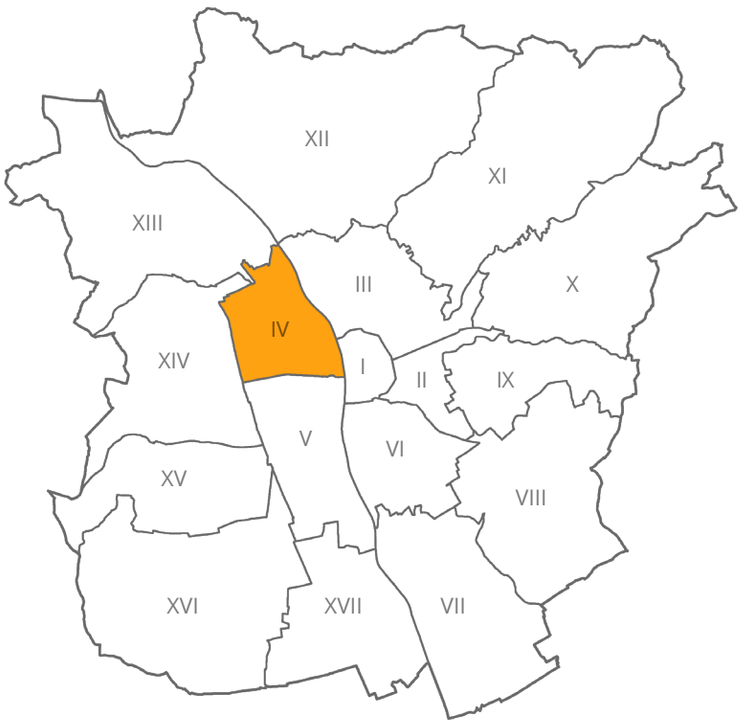


Figure 5.1: Graz city plan with districts

GRAZ CITY DISTRICTS:

I. Innere Stadt (City Centre)
II. St. Leonhard
III. Geidorf
IV. Lend
V. Gries
VI. Jakomini

VII. Liebenau
VIII. St. Peter
IX. Waltendorf
X. Ries
XI. Mariatrost
XII. Andritz

XIII. Gösting
XIV. Eggenberg
XV. Wetzelsdorf
XVI. Straßgang
XVII. Puntigam

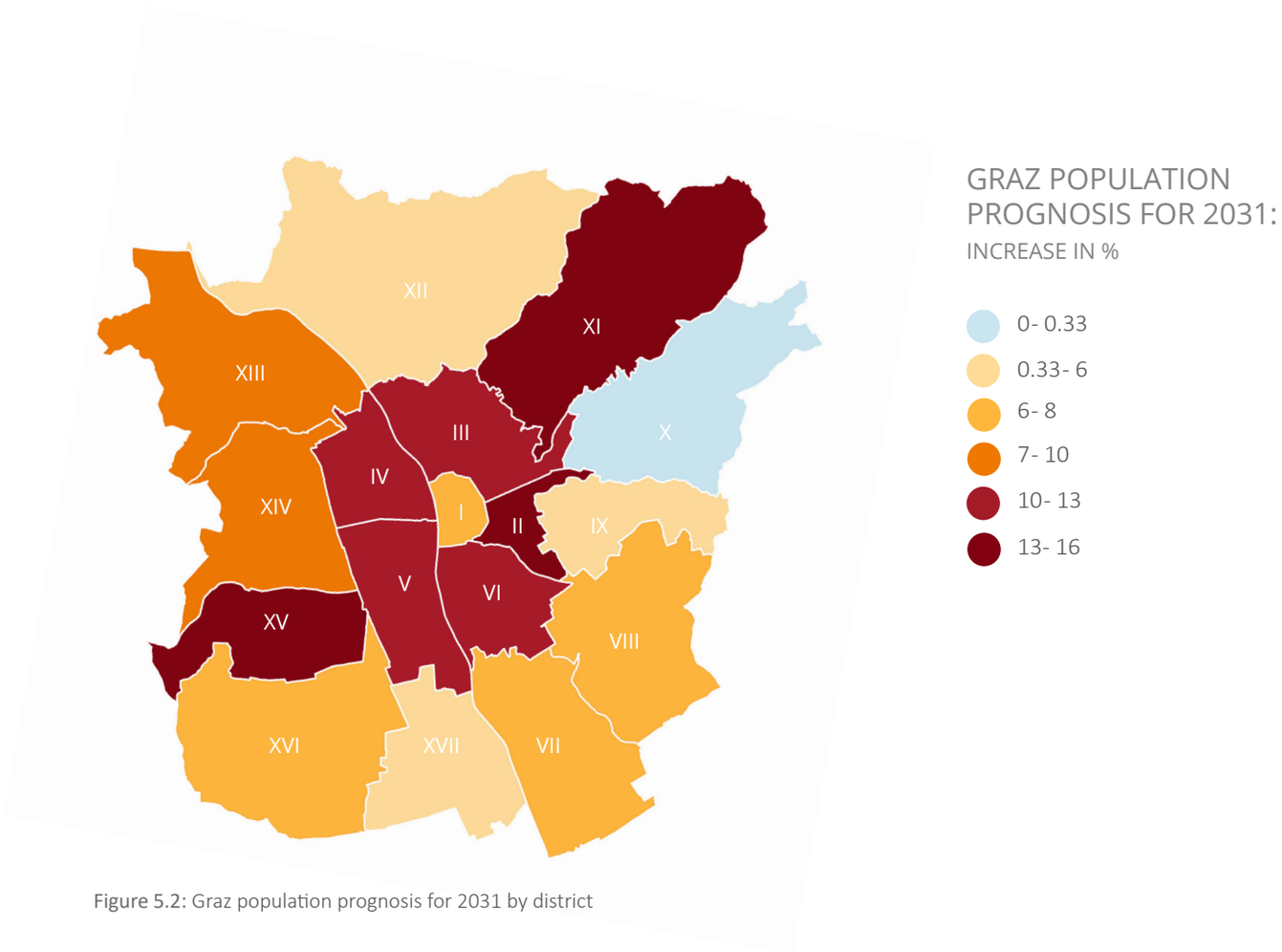


Figure 5.2: Graz population prognosis for 2031 by district

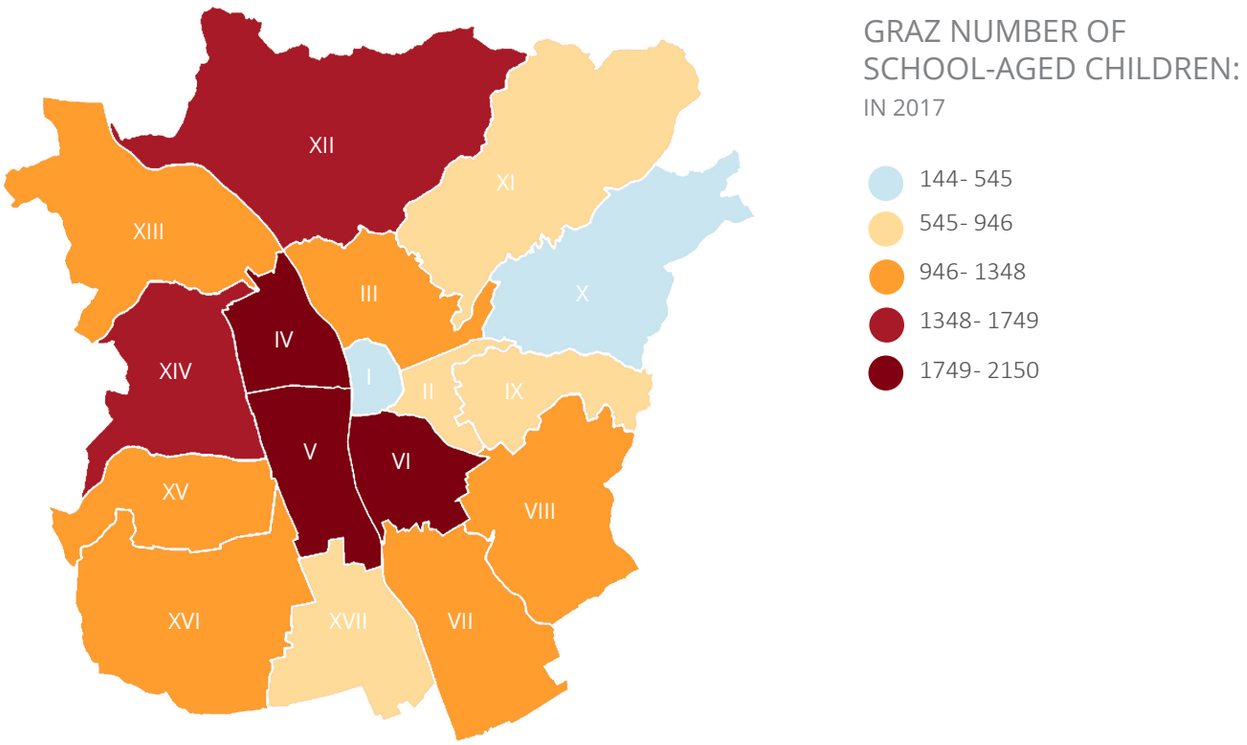


Figure 5.3: Graz number of school-aged children by district

5.2 OPEN SPACE FACILITIES

In 2010 in the context of the establishment of 4.0 Stadtentwicklungskonzept (4.0 STEK) (Urban development concept) a research on the number and accessibility of open areas in Graz was conducted by the City Graz Urban Planning Office. The accepted minimum area per resident is around 3 sqm in private housing areas and around 10 sqm per resident in districts with a high density of development. According to the study results the number of public open areas, such as playgrounds, sport fields, parks in Graz is not sufficient. Some city districts including Lend district were named as ones where immediate action was required. The number of green spaces in these areas is very limited and the existing ones are often not publicly accessible.[3]

In 2014, on the basis of this study a catalogue of proposed measures for the rehabilitation of the area was published. As stated in the catalogue introducing 50 new open spaces and 21 redesigned areas would help to significantly improve the overall situation in the city. (Fig. 5.5) However, in some districts there is still a lack of public open areas and the district Lend remains one of the districts where this deficiency remains most significant. (Fig. 5.4)[4]

District	Absolut Deficit	New open spaces	Result
Andritz	-5,9	10.000m²	-4,9
Eggenberg	-8,2	5500m²	-7,7
Geidorf	-4,6	0	-4,6
Gösting	-2	16500m²	-0,3
Gries	-15,7	25.000m²	-13,2
Innere Stadt	19,1	0	19,1
Jakomini	-17,3	33.000m²	-14
Lend	**-17,9**	**41.000m²**	**-13,8**
Liebenau	-3,3	121.000m²	8,8
Mariatrost	0,1	2000m²	0,3
Puntigam	-4,4	40.000m²	-0,4
Reininghaus	-0,1	53.000m²	5,2
Ries	-2,8	6000m²	-2,2
St. Leonhard	-8,5	3000m²	-8,2
St. Peter	0	13.000m²	1,3
Straßgang	2,8	32.000m²	´-6
Waltendorf	-0,6	0	-0,6
Wetzelsdorf	-6,3	60.000m²	-0,3
Total	**-75,6**	**46,1**	**-29,5**

Figure 5.4: Deficit in open space facilities by district after carrying out the rehabilitation program

3 See Zech 2010, 8-10.

4 See Eva Maria Benedikt: Grünraum – Offensive Informationsbericht: Bericht an den Ausschuss für Stadt- und Grünraumplanung, 14.05.2014, online: http://www.jakomini-basis.at/wp-content/uploads/2016/02/2014.07.01_artikel.gr%C3%BCnraumoffensive_infomationsbericht.gemeinderat.pdf, 08.02.2018

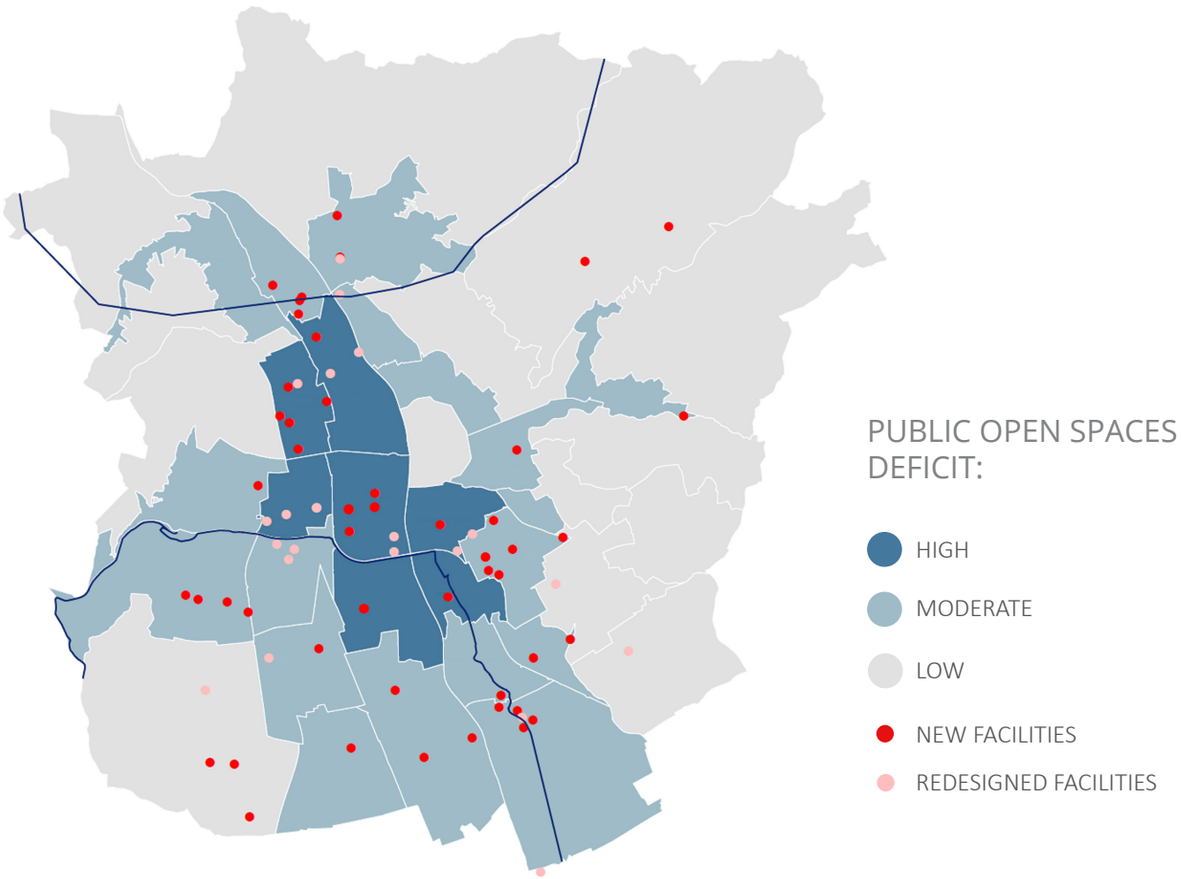


Figure 5.5: Deficit in open space facilities by district

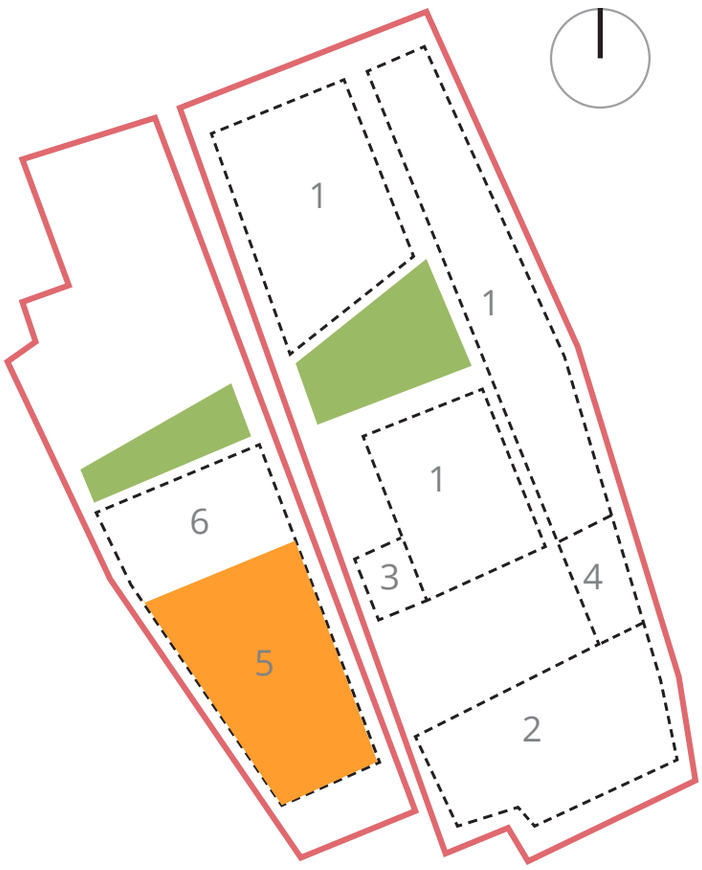
5.3 TRANSPORT CONNECTIONS

The Smart-City area is located in the South-West part of Lend district at about 800 meters distance from the main railway station. The East-side of the plot adjoins an important city railway connection, Südbahn. The plot is bordered on the north on Peter-Tunner Gasse – a vital transport connection between the western and eastern parts of the city. Over the years this area has got much attention due to its big potential for development. One of the main characteristics of the area is a progressive change from former old industrial infrastructure to modern vibrant residential quarters.

The new School Campus will be located on the fifth plot of Smart-City development (Fig. 5.6), occupying the south-west construction area. The future building site, which was formerly used as a parking lot for the Helmut List Concert hall, is bounded by the "Cool City" project (see par. 4.2 for the description) in the North, by Waagner-Biro-Straße street and the Helmut List Concert hall in the East, Waldertgasse street in the West and Dreierschützengasse street with existing buildings in the South (Fig. 5.7).

The maximum allowed building height for the area is 22,5 m in the East which lowers down to 12,5 m in the West. The design area is easily accessible by both public and private transport. Due to the location of the tram line stations, the easiest way to access the future school area with public transport is from Waagner-Biro street. Therefore, it is suggested to locate the main School Entrance with a significant amount of bicycle parking places and a pick-up /drop-off area for children here (Fig. 5.8).[5]

5 See Stadt Graz - Stadtbaudirektion/Referat Hochbau 2015, 22-23



SMART CITY AREA DESIGN PLOTS:

1. COMPETITION SITE CENTER AND NORTH
2. COMPETITION “SMART CENTER”
3. SCIENCE TOWER
4. ENERGY CENTER
5. SCHOOL CAMPUS COMPETITION
6. COOL CITY COMPETITION

Figure 5.6: Smart city area design plots

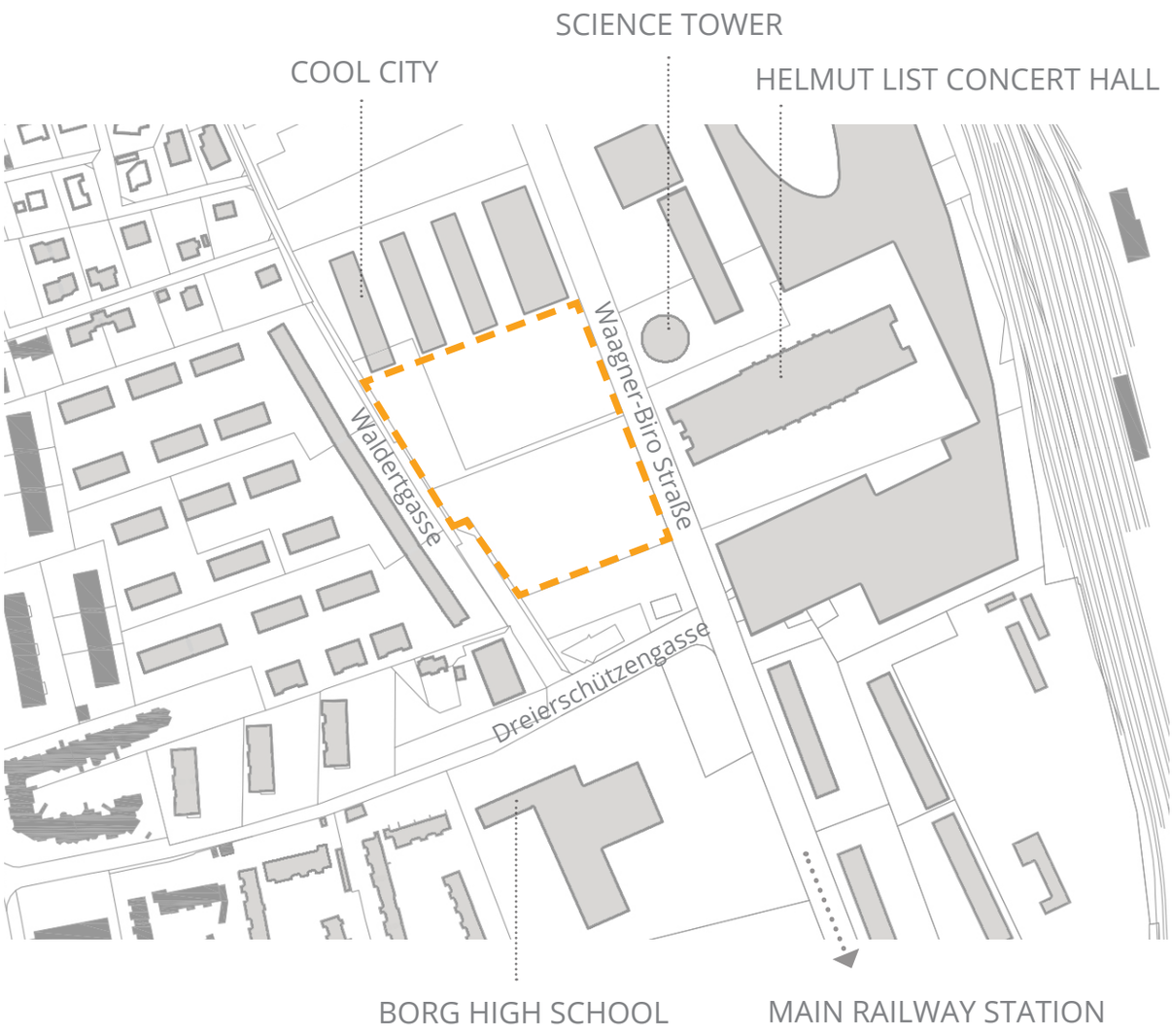


Figure 5.7: Site location and surrounding buildings

Figure 5.8: Prerequisites for transport planning in the school area

5.4 CONTEXT RESEARCH, IMPORTANT BUILDINGS IN THE AREA

Graz Main Railway Station:

Initially developed in 1847 by architect Moritz Löhr to connect Vienna city with one of the most important harbours located in Trieste. Within years a diverse industrial area developed around the railway station. After heavy bombing in 1945 the railway station was completely destroyed. It was restored in 1956 by the architect Wilhelm Aduatz. In autumn 2015 the new main railway station building was opened after another reconstruction carried out by the architectural office from Vienna Zechner & Zechner.

The construction of the new building lasted from 2009. Today Graz Main railway station serves on average more than 40 thousand people per day. With the wave-shaped roof and a "golden eye" circle emphasizing the front square, Graz Railway station represents contemporary architecture giving the city area a modern character.[6]

Figure 5.9: Zechner & Zechner ZT GmbH, Graz Main Railway Station, 2015, Waved roof over the railways, Photo: pierer.net photography

6 See Zechner & Zechner ZT GmbH/Redaktion GAT GrazArchitekturTäglich: Hauptbahnhof Graz von Zechner&Zechner umgebaut, 19.06.2015, http://www.gat.st/news/hauptbahnhof-graz-von-zechnerzechner-umgebaut, 06.01.2018

Helmut List Halle:

It is currently one of the main buildings used for performances and concerts in Graz. The concert hall is a new interpretation of a former industrial hall designed by Markus Pernthaller which represents a connection between innovation and traditions. The finished building was presented in 2003, its opening coinciding with Graz becoming the Cultural Capital of Europe for that year.

Due to its unique acoustical system that consists out of several layers, it is also used for live music recordings. Another feature of the concert hall is an adjustable inner space that allows various possibilities of spatial organization depending on the event that is taking place. Due to the variety of events held here, Helmut List Halle is in very high demand.[7]

Figure 5.10: Markus Pernthaller Helmut List Halle, 2003, main entrance, Photo: Hasso Hohmann

7 See Graz Zweitausenddrei, http://www.graz03.at/servlet/sls/Tornado/web/2003/content/87011A7D78B08223C1256CB00058ED0B, 06.01.2018

Science Tower:

The new office building, designed by Markus Pernthaller architecture office, is a 60-meter tall, cone-shaped tower equipped with the latest technologies. The building structure consists of two layers – an inner wooden layer and an outer glazed skin with inbuilt photovoltaic panels. The outer skin functions as an effective energy source with the help of the newest battery technology. Produced energy is used to power the building's support systems generating enough power for light, computers and other office electronic equipment. The tower is supplied with intelligent control systems to regulate the inner temperature and provide "free cooling" during offices non-operating hours. The science tower represents a start in the development of a new city area with "smart energy" where social, economic and ecological goals are achieved together.[8]

Figure 5.11: Markus Pernthaller Architekten, Science Tower, 2017

8 See Markus Pernthaler Architekten: Smart City Graz- Tower, http://pernthaler.at/portfolio-item/smart-city-tower/, 6.01.2018

BORG Dreierschützengasse:

The educational building BORG Dreierschützengasse high school is located South of the proposed area for the future "Smart City" school. Built in 2002 by the architectural office Gangoly & Kristiner Architekten, the four storey gymnasium building is placed on a sloped surface with a height difference of up to 2.5 meters from the street level.

The building volume uses the advantage of its location and follows the natural slope connecting to the street with a wide ramp. The ramp and the rooftop of the gym hall, which is built into the slope, create a space for recreation.[9]

Figure 5.12: Gangoly & Kristiner Architekten, BORG Dreierschützengasse, 2002, outside view

9 See Otto Kapfinger: Bundesoberstufenrealgymnasium, 10.04 2003, https://www.nextroom.at/building.php?id=232, 6.01.2018

CHAPTER 6

DESIGN PROPOSAL

6. DESIGN PROPOSAL

Primary and secondary school design concept

One of the main goals of contemporary architecture is to create environmental conditions and a spatial atmosphere that are suitable for all individuals. The main idea behind this project is to introduce autism-aware design in a typical public school building in order to cater for the special needs of children with autism, to improve the efficiency of the studying process and to increase social integration. The information gathered during the research work shows that the number of people diagnosed with autism has increased. This has resulted in a rise of public awareness. Parents of children diagnosed with ASD face the task of choosing an educational institution that takes into consideration the special needs of their child. School time is one of the most impactful and at the same time stressful periods in every person's life. Acceptance is extremely important to children since it helps them gain the necessary skills in order to live a complete and fulfilling life as an adult. This makes an inclusive autism-aware school design more relevant. For this reason, it is necessary to develop a new building typology that satisfies the needs of all students. In this chapter a new school building design approach is outlined to incorporate these goals.

6.1 SPATIAL ORGANIZATION

The "Smart city" school design task was created to consider all the needs of modern school children and general social trends. The future school building should not only provide sufficient study areas but it must also have spaces for free time and after school time activities. Moreover, it should also promote the integration of the community into the school social life through the organization of sport or cultural events in the school building premises. Therefore, functional zoning plays a significant role in its spatial organization.

After analysing the list of necessary spaces for the future school proposed by the design task, it was decided to allocate the spaces in a diagram in accordance with the level of stimulation. Rooms where lots of physical activity takes place are located at the top as the most stimulating spaces, and rooms that are intended for studying are organized in clusters at the bottom representing spaces of low stimulus. (Fig. 6.1) However, each cluster could be further subdivided into areas that are less or more stimulating. In this way a learning landscape room that is multifunctional is seen as a more stimulating environment compared to a classroom. The school staff area is located at the bottom of this stimulus graduation since these premises, forming a separate block, are accessed mainly by teachers, parents and only in exceptional cases by children. Service spaces are not rated in the graph since they are normally off limits to children.

‘The design process is finding the questions: there is always an answer to every question. You have to find the questions and not the answers; then it is only a matter of time to find the answers, but the question is the difficult part.’

Lawson 1994, 48

PRIMARY SCHOOL

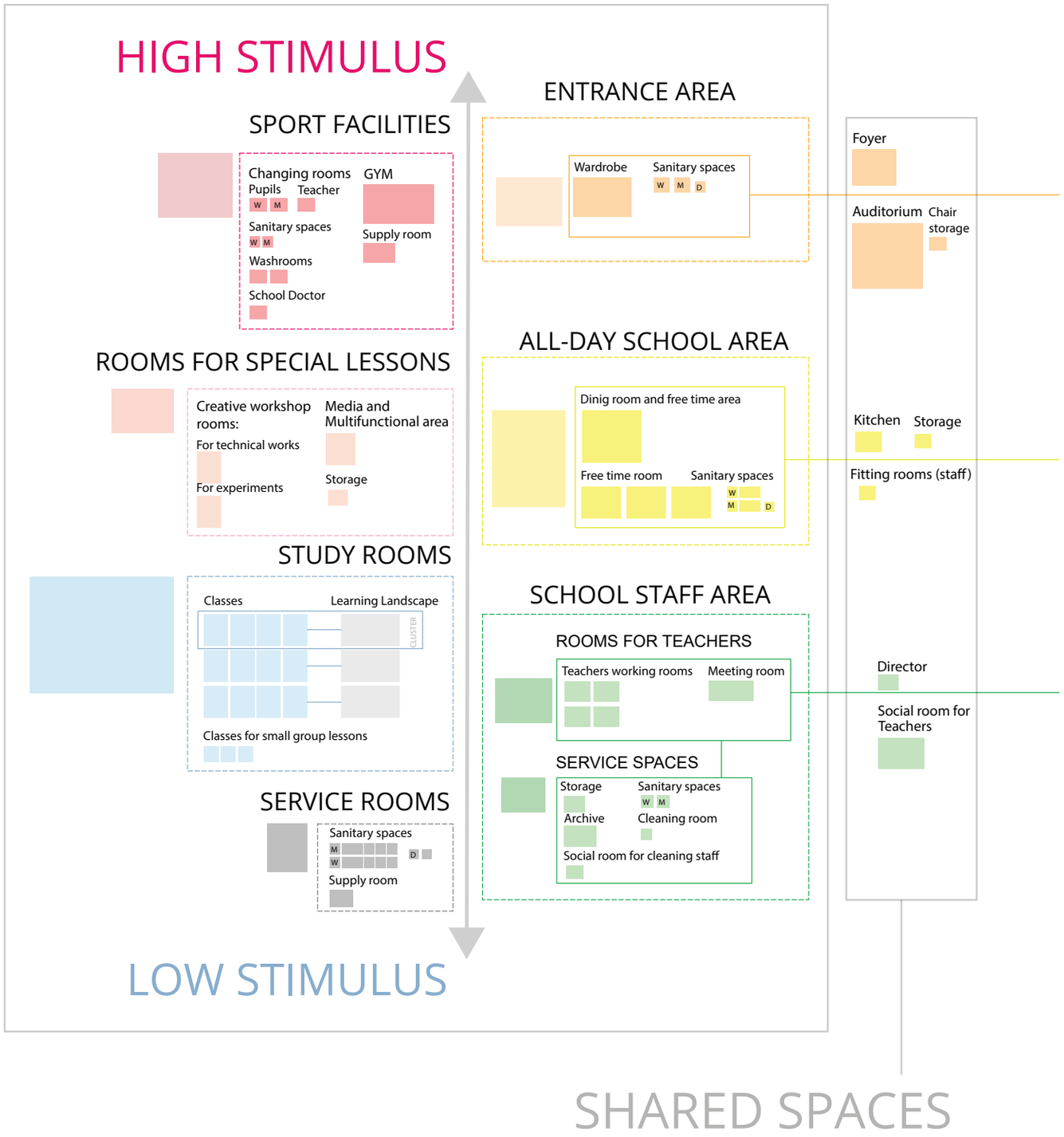
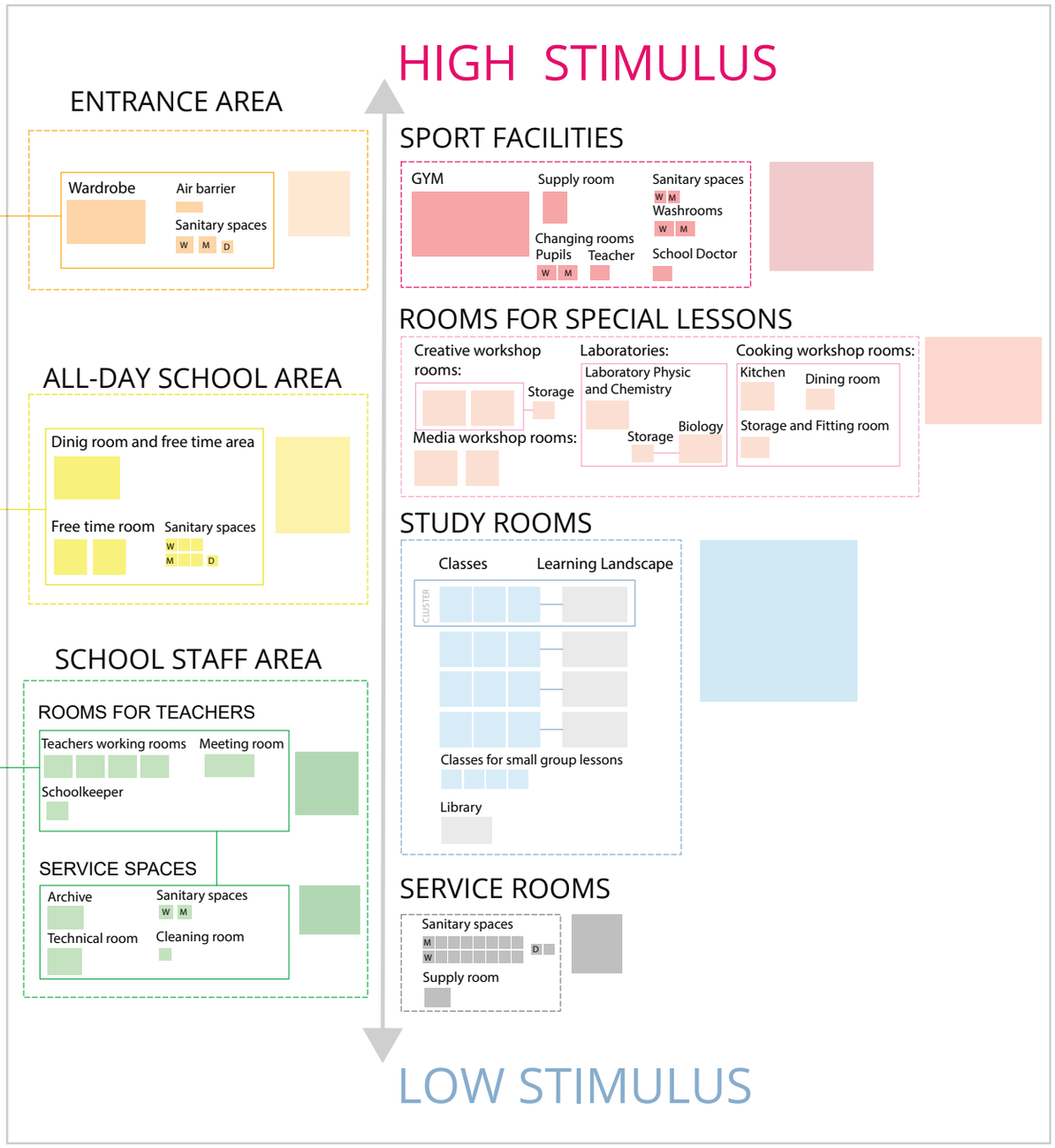


Figure 6.1: School spatial programme arranged by the level of stimulation

SECONDARY SCHOOL



6.2 FIRST CONCEPTUAL DESIGN

Functional distribution:

After deciding upon the overall spatial allocation according to the level of stimulation, functional groups were formed corresponding to the daily routine of a school child. These groups were organized in accordance with spatial stimulation into a preliminary building volume. Thus, the entrance block, being the area of the highest footfall with a vibrant atmosphere, is related to environments of high stimulus and therefore will be followed by an area with a similar level of stimulation – the sport facilities block. The next block, characterized by moderate to lower stimulation levels, are the group of rooms for creative workshops and all-day school facilities. The final group of premises which has the lowest level of stimulation are clusters of study rooms. (Fig. 6.2) This overall spatial organization is applicable to both primary and secondary schools.

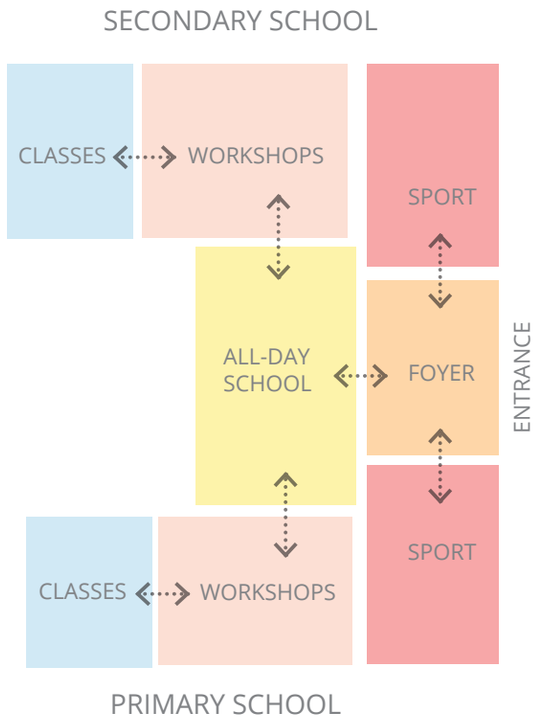


Figure 6.2: Overall spatial organisation scheme

Typology:

At the start of the design process it was decided to rethink the typical typological organization of a mainstream school campus, where the building block is normally separated from the supporting outside spaces. It was proposed to integrate an outside yard into the building creating a big inside space for outdoor activities. This inner yard creates not only a feeling of safety but also encourages children to develop independency while not being constantly supervised by the teacher. Due to its size this courtyard can serve various functions with enough room for social interaction as well as sufficient space for more secluded time spending. (Fig. 6.3)

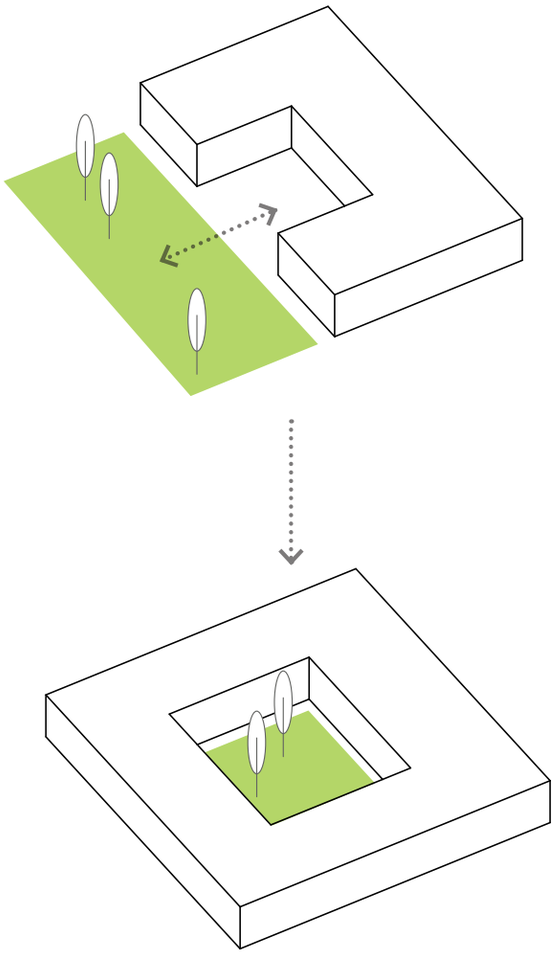


Figure 6.3: Courtyard integration into the building volume

Entrances:

According to the competition design task, the school campus building volume has to include both a primary and a secondary school. While sharing some functions these two schools have to operate independently. However, all the shared facilities have to be easily accessible to all students. Therefore, three separate entrances to the building are planned. The main entrance on the central building axis leads people directly into the foyer of the school auditorium. This entrance will be used mainly for local community and school events. Entrances to the primary and to the secondary schools are located in the southern and in the northern parts of the building correspondingly. (Fig. 6.4)

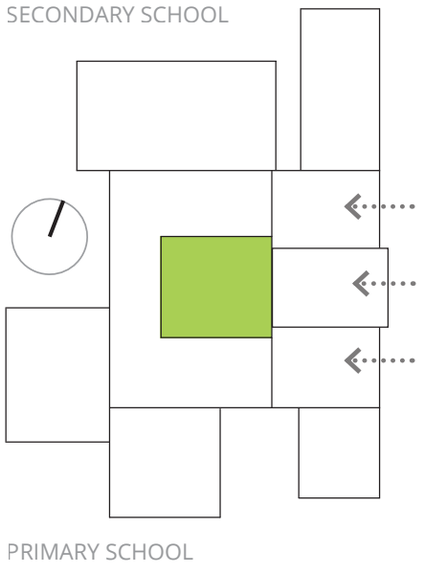


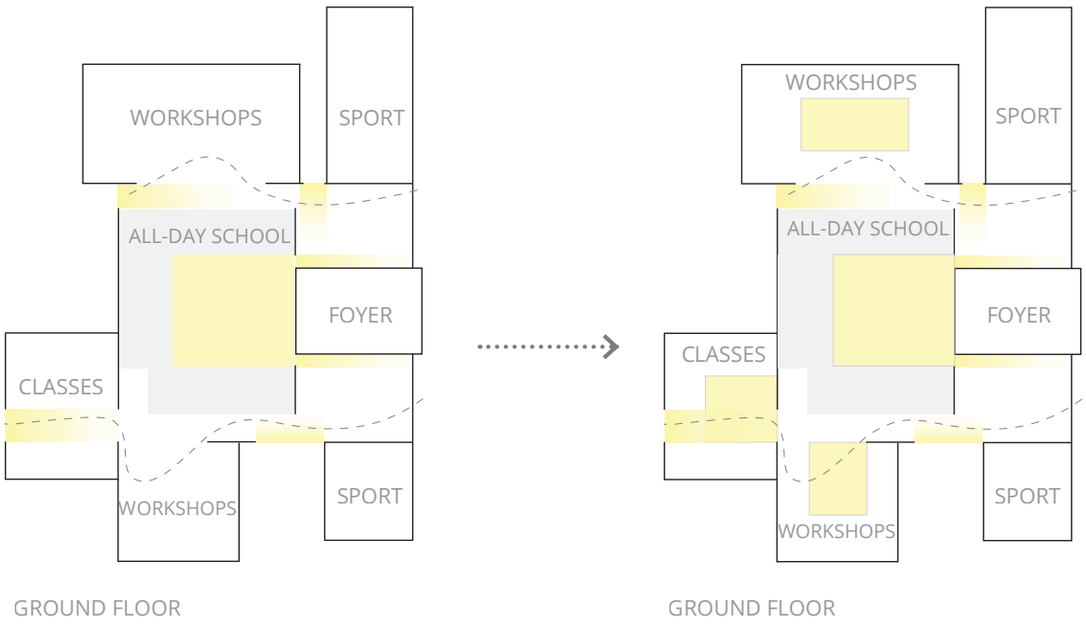
Figure 6.4: Building entrances

Transition zones:

After allocation of spaces by the level of stimulation and creating groups with similar activities, it is important to create transitions between zones of high and low stimulus whilst avoiding long narrow monotonous corridors. The best solution would be one where transition zones not only serve as connections between spaces but also give visual hints that help children to orientate between different blocks.

One way to approach this task is to create orientation aids through day light and outside views that signal a coming change of activity or a start of a different block of spaces or clusters. Hence the change of stimulation levels is always indicated by a source of daylight. Following this idea, each building level has cuts in its volume that allow day light to enter and assist with path-finding. (Fig. 6.5)

This idea is further developed, while also following the main concept of safety and independency by providing each block of study premises with a small inner courtyard. These courtyards work both as an indicator of a new area and also as a place for children to spent time outside, thereby making outdoor activities easily and independently accessible during the daily school routine. (Fig. 6.6)



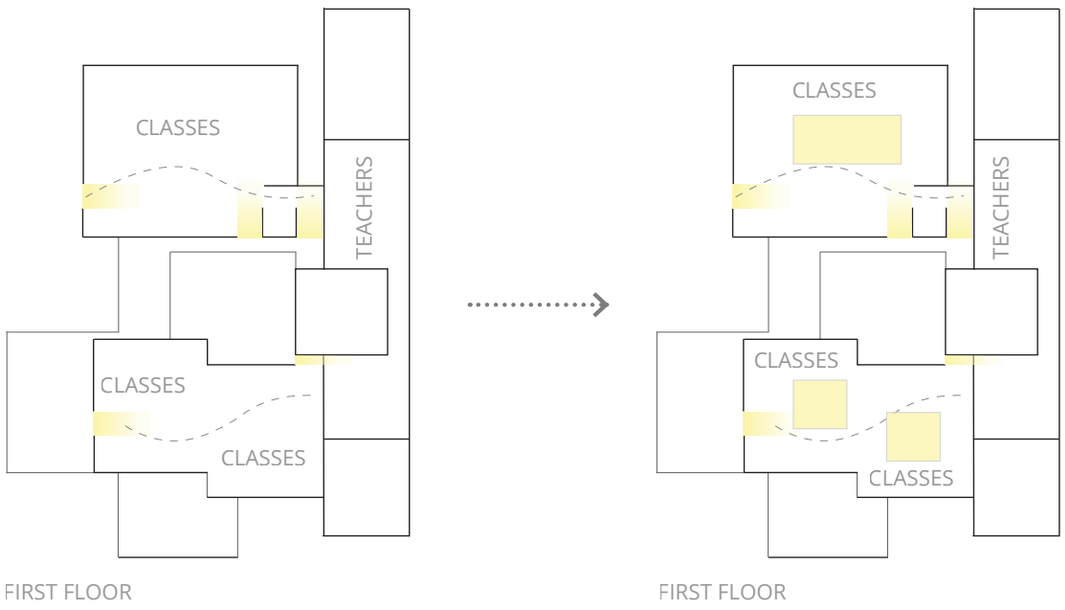


Figure 6.5: Daylight leading through the buildng

Figure 6.6: Inbuilt courtyards support the idea of light navigation

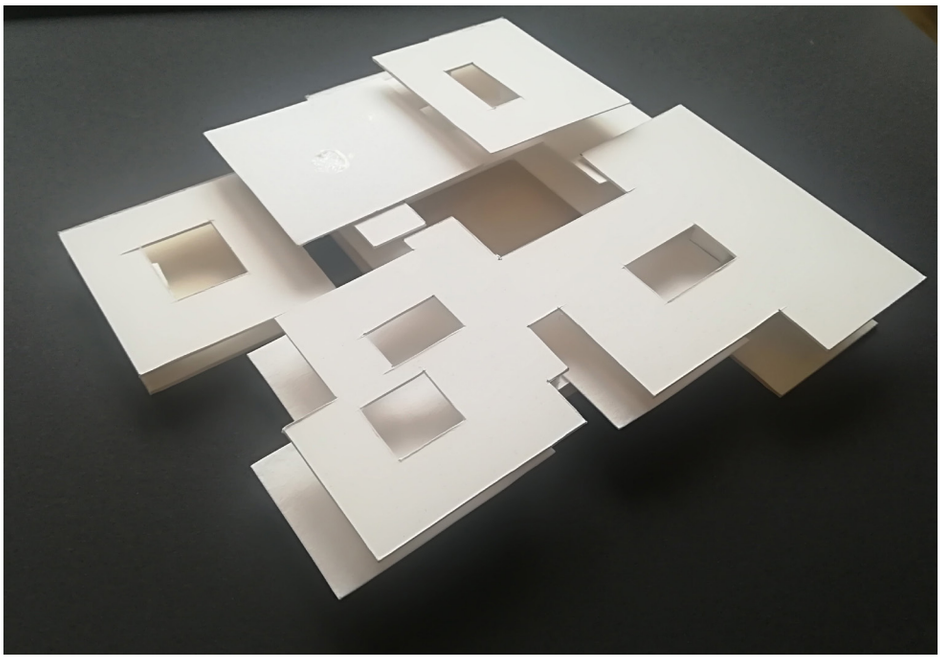


Figure 6.7: First conceptual physical model

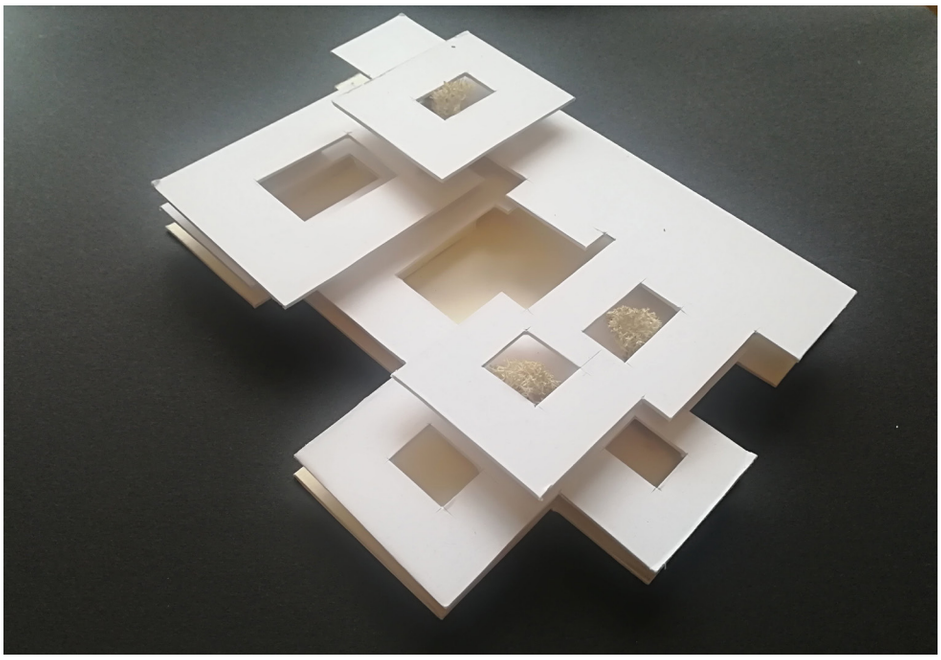


Figure 6.8: Revised conceptual physical model

6.3 SCHOOL LAYOUT DESIGN

Navigation in the building:

After the analysis of the main motion paths of children throughout the day it was decided to reshape the courtyards from rectangular into a more rounded form. This helps to solve several design issues at the same time. Firstly, it makes the transition between spaces smoother – no sharp corners, the shapes of the courtyards follow the trajectory of the user's motion. Secondly, it helps to highlight the difference in spatial quality between study and free time, play areas. This significant change in the atmosphere of a space helps an autistic user to differentiate between correlating activities and switch easily from one task to another.

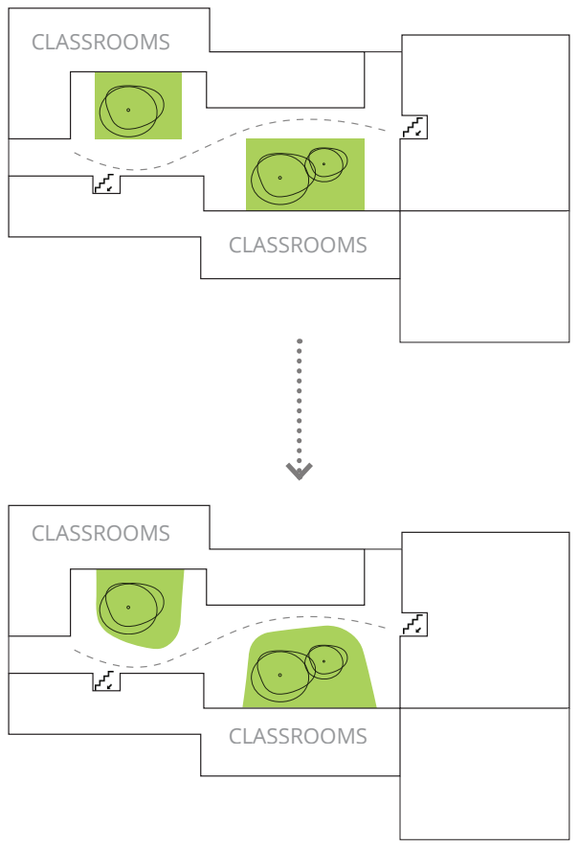


Figure 6.9: Courtyards shape. First floor fragment

Figure 6.10: Master plan 1:1500

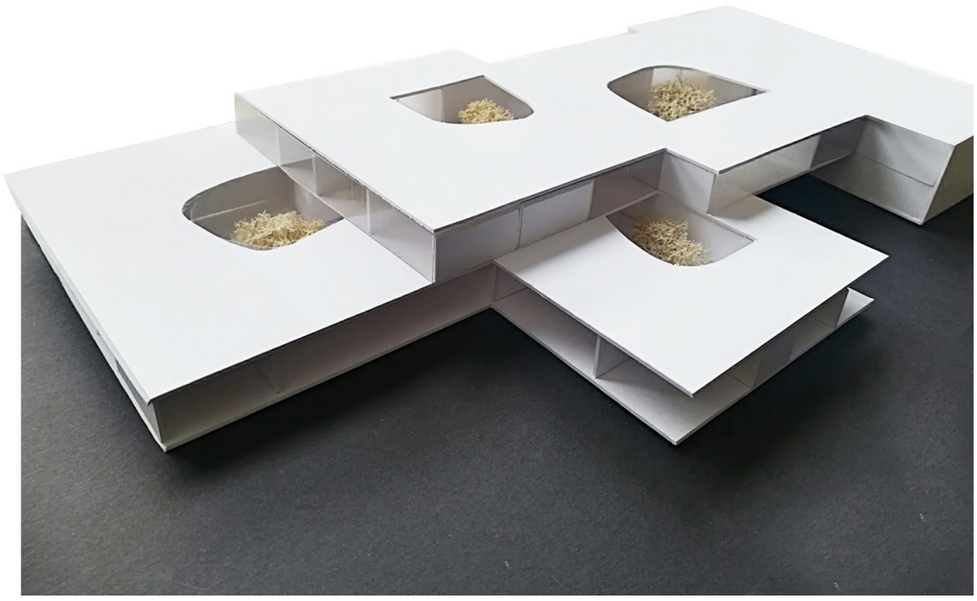


Figure 6.11: Physical model of a building part with reshaped courtyards

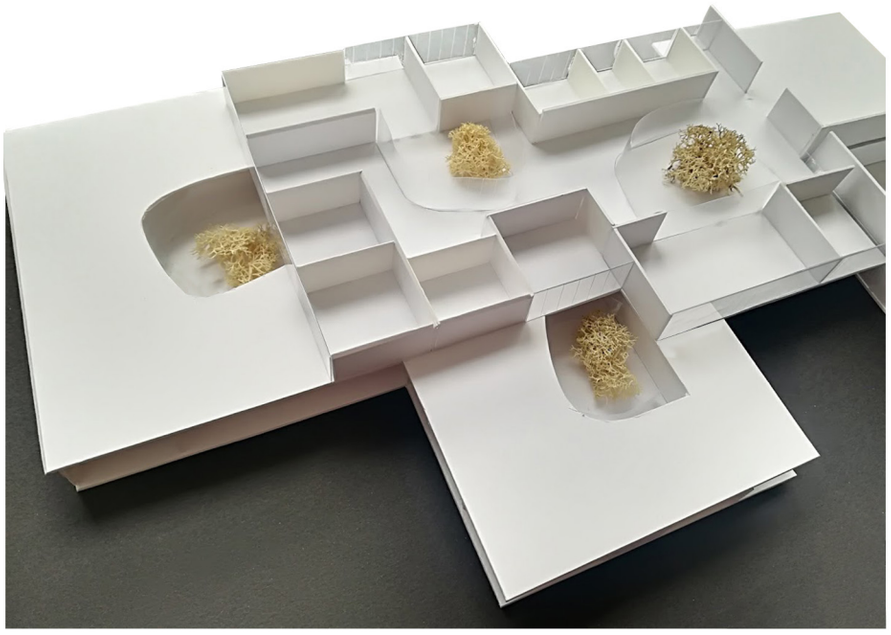


Figure 6.12: Physical model of a building part with reshaped courtyards

GROUND FLOOR AREAS :

A ENTRANCE AREA

1	Foyer	105 m²
2	Auditorium	300 m²

PRIMARY SCHOOL PREMISES:

3	Locker Room	154 m²
4	WC- W	16 m²
5	WC- M	13 m²
6	WC- D	6 m²

SECONDARY SCHOOL PREMISES:

7	Locker Room	154 m²
8	WC- W	18 m²
9	WC- M	17 m²
10	WC- D	6 m²
11	Chair storage	11 m²

B SPORT BLOCK
PRIMARY SCHOOL

1	GYM	215 m²
2	Changing rooms W/M	24 m²
3	Washroom	10 m²
4	Changing room for Teachers	15 m²
5	School doctor	14 m²
6	GYM Supply room	38 m²

C SPECIAL LESSONS BLOCK
PRIMARY SCHOOL

1	Creative room for experiments	64 m²
2	Room for teachers	27 m²
3	Room for technical works	49 m²
4	Storage room	15 m²
5	Media and Multifunctional room	77 m²
6	Service space	47 m²
7	WC- W	25 m²
8	WC- M	19 m²

Circulation space and outside area: 203 m²

D STUDY CLUSTER
PRIMARY SCHOOL

1	Classroom	50 m²
2	Learning landscape	120 m²
3	Classroom for small group lessons	16 m²
4	Room for teachers	34 m²

Circulation space and outside area: 240 m²

E ALL- DAY SCHOOL AREA

PRIMARY SCHOOL PREMISES:

1	Free time room	80 m²
2	Dining room	147 m²
3	WC-W	17 m²
4	WC-M	17 m²
5	WC-D	6 m²

SHARED PREMISES:

6	Kitchen	41 m²
7	Storage room	14 m²
8	Fitting rooms for staff	15 m²

SECONDARY SCHOOL PREMISES:

9	Dining room	230 m²
10	Free time room	64 m²

Outside area: 546 m²

F SPECIAL LESSONS BLOCK
SECONDARY SCHOOL

1	Physics Laboratory	66 m²
2	Storage room	11 m²
3	Biology Laboratory	61 m²
4	Creative workshops room	75 m²
5	Media and Multifunctional room	67 m²
6	Media room	56 m²
7	Kitchen for cooking classes	44 m²
8	Dining room	32 m²
9	Kitchen storage	25 m²
10	Room for Teachers	48 m²
11	WC-M	12 m²
12	WC-W	12 m²
13	Cleaning room	3 m²

Circulation space and outside area: 290 m²

G SPORT BLOCK
SECONDARY SCHOOL

1	GYM	520 m²
2	Changing rooms W/M	24 m²
3	Washroom	10 m²
4	GYM Supply room	37 m²
5	School doctor	15 m²
6	Changing room for Teachers	19 m²

GROUND FLOOR TOTAL AREA : 5 260 m²

Figure 6.13: Ground floor 1:500

Figure 6.14: First floor 1:500

FIRST FLOOR AREAS :

A STUDY CLUSTERS
PRIMARY SCHOOL

1	Classroom	50 m²
2	Learning landscape	120 m²
3	Classroom for small group lessons	16 m²
4	WC-W	17 m²
5	WC-M	15 m²
6	WC-D	6 m²
7	Cleaning room	3 m²
	Circulation space and outside area:	580 m²

B STUDY CLUSTERS
SECONDARY SCHOOL

1	Classroom	60 m²
2	Learning landscape	120 m²
3	Classroom for small group lessons	20 m²
4	Library	58 m²
5	Supply room	5 m²
6	WC-M	14 m²
7	WC-F	14 m²
8	WC-D	6 m²
9	Cleaning room	3 m²
	Circulation space and outside area:	475 m²

C SCHOOL STAFF AREA

1	Teachers working room	35 m²
2	Meeting room	52 m²
3	Headmasters office	154 m²
4	Teachers social room	16 m²
5	Schoolkeeper	19 m²
6	Social room for cleaning staff	6 m²
7	Teachers WC- M	8 m²
8	Teachers WC- W	8 m²
9	Cleaning room	3 m²
10	Archive	30 m²
11	Storage room	14 m²
12	Technical room	22 m²
	Circulation space	270 m²

FIRST FLOOR TOTAL AREA : **3 375 m²**

Figure 6.15: Second floor 1:500

SECOND FLOOR AREAS :

A STUDY CLUSTERS
SECONDARY SCHOOL

1	Classroom	60 m²
2	Learning landscape	110 m²
3	Classroom for small group lessons	16 m²
4	WC-W	12 m²
5	WC-M	12 m²
	Circulation space and outside area:	301 m²

SECOND FLOOR TOTAL AREA : **921 m²**

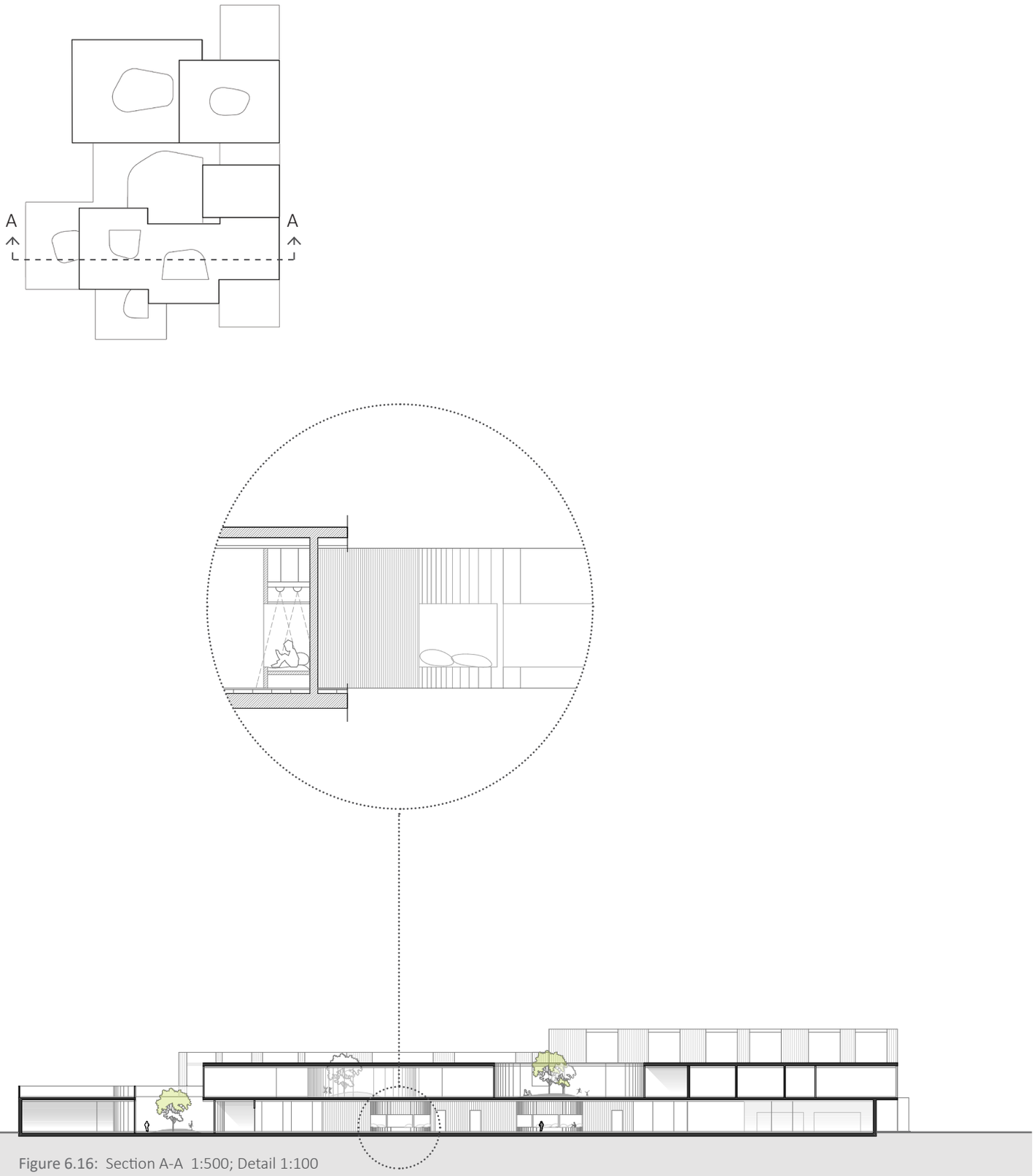


Figure 6.16: Section A-A 1:500; Detail 1:100

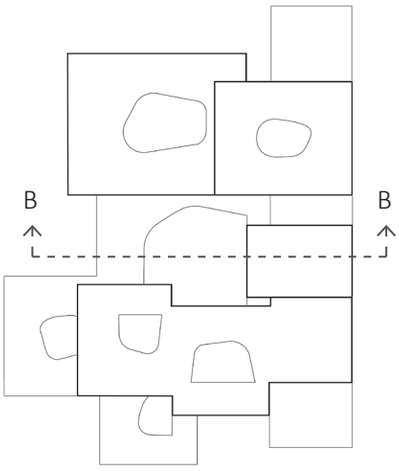


Figure 6.17: Section B-B 1:500

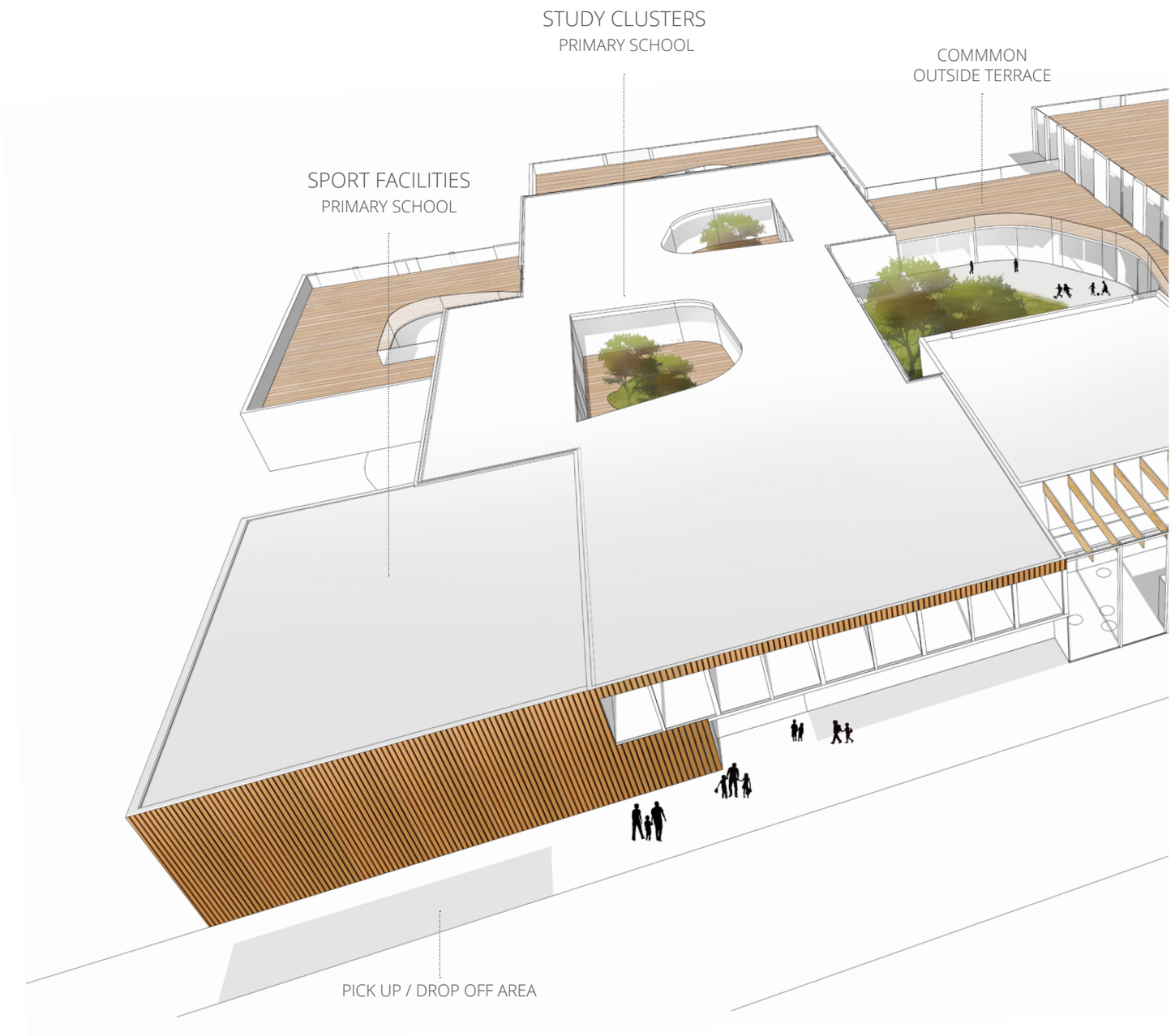


Figure 6.18: Perspective view towards Waagner-Biro Straße

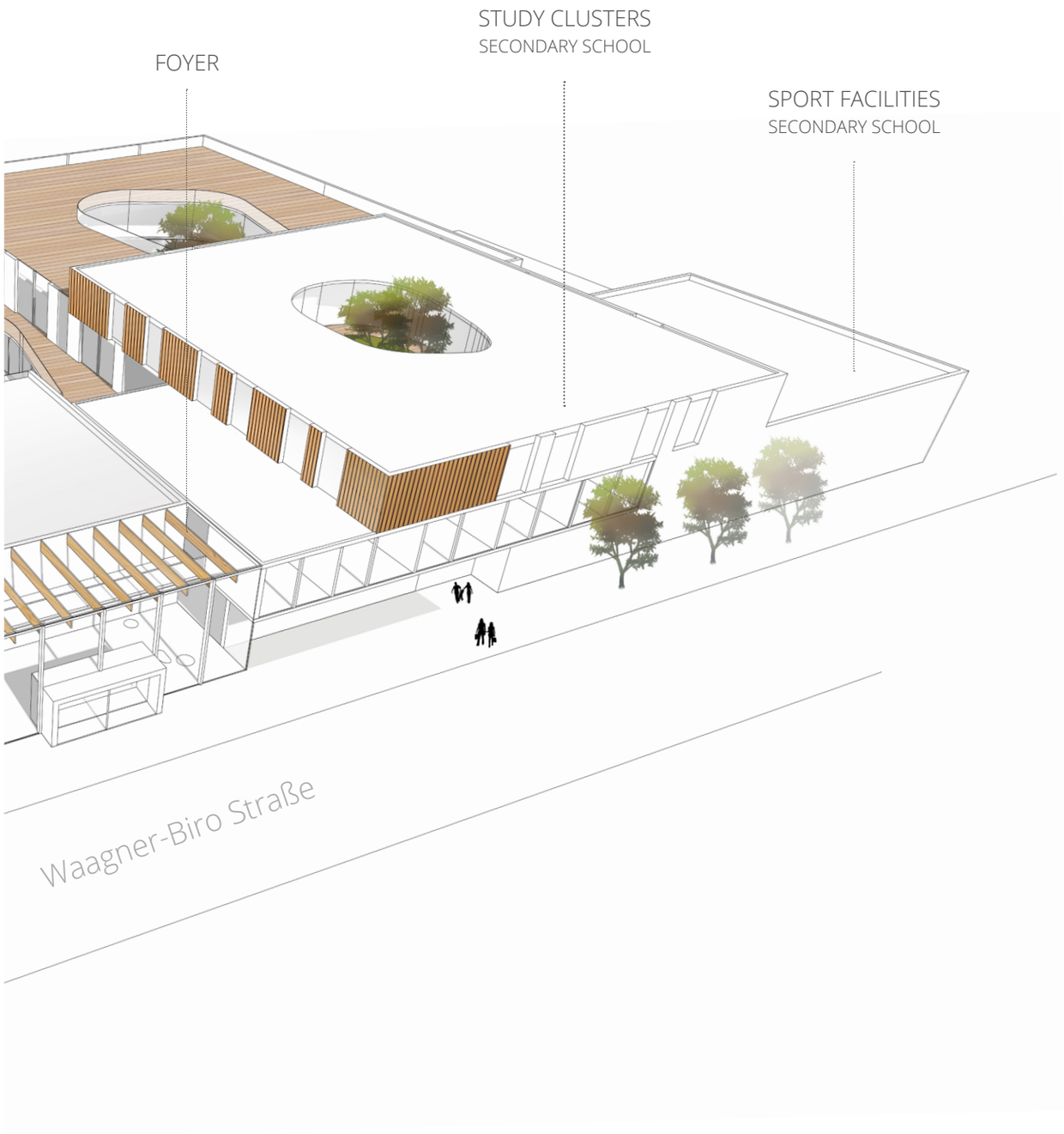
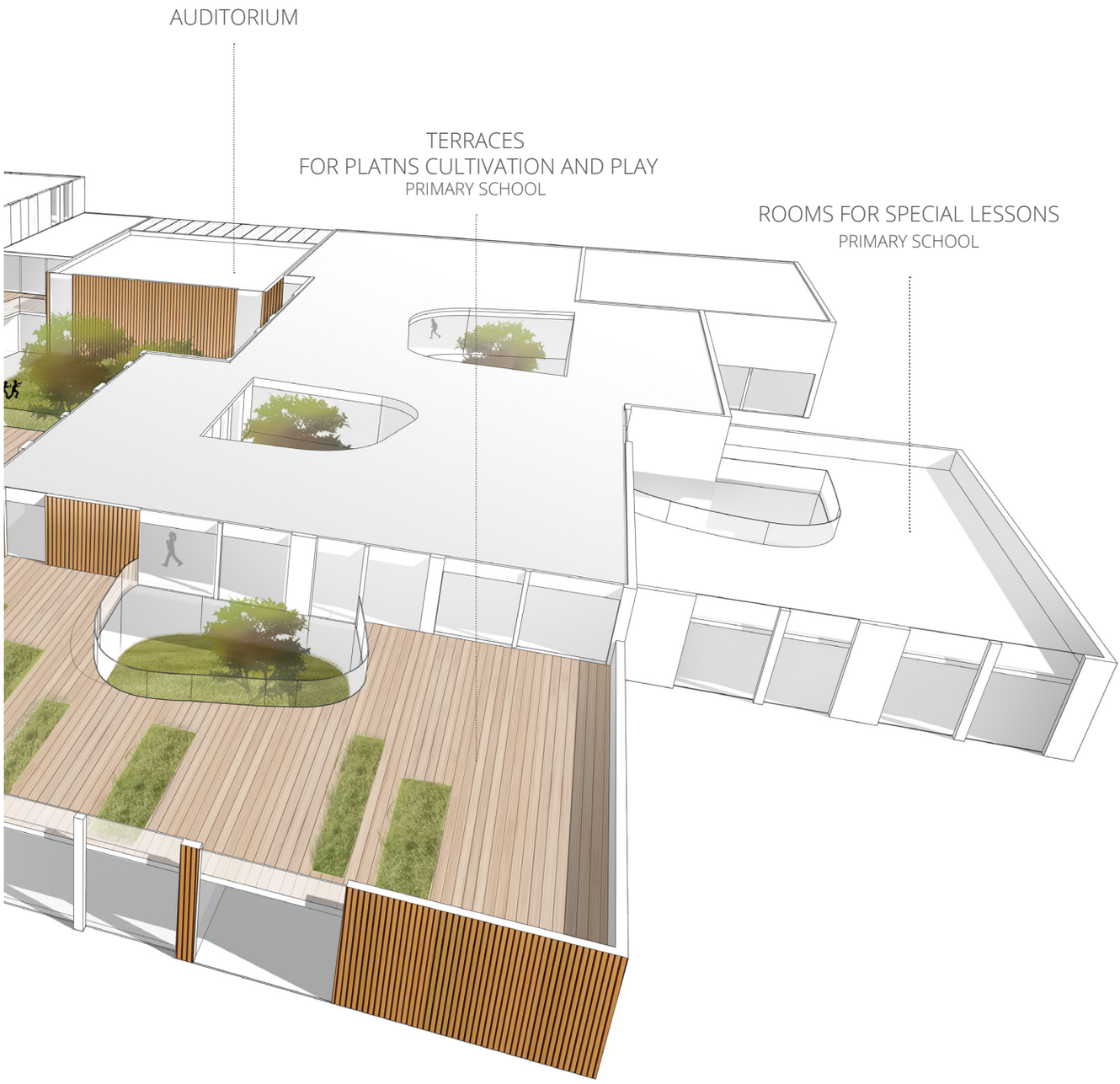

STUDY CLUSTERS
SECONDARY SCHOOL
FOYER
SPORT FACILITIES
SECONDARY SCHOOL
Waagner-Biro Straße

Figure 6.19: Perspective view towards Waldertgasse


AUDITORIUM
TERRACES
FOR PLATNS CULTIVATION AND PLAY
PRIMARY SCHOOL
ROOMS FOR SPECIAL LESSONS
PRIMARY SCHOOL

Cluster organisation and the Sensory room:

A part of the learning landscape in each cluster (Fig. 6.20) is designed as a sensory room. A sensory room is a specialized place conceptualized in order to meet the sensory needs of children. Having an opportunity to release their feelings and emotions through diverse physical activities, children improve their abilities to learn and stay concentrated. Visiting this kind of space helps children on the autistic spectrum to stay more focused during classes.

Various kinds of activities could take place in a sensory room such as climbing, swinging, gymnastic exercises and others. The sensory room must have a completely different atmosphere compared to an ordinary classroom. It is important that the students feel the difference between these spaces. Materials used in sensory rooms are more sound-absorbing, artificial light is less intense, and lots of soft pillows and inflatable mats are distributed throughout the spaces. Children should have a possibility to express themselves during the break without feeling restricted by the school rules. In this project sensory rooms additionally have a direct connection to the outdoor space of a sensory garden. (Fig. 6.21)

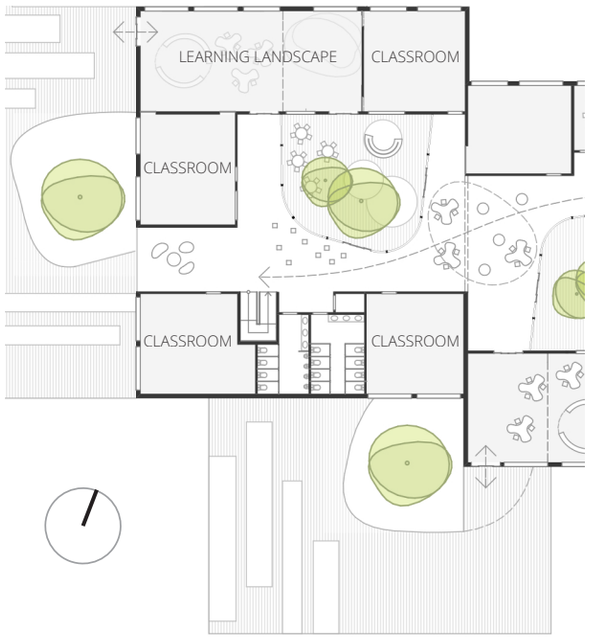


Figure 6.20: Primary school area, first floor fragment. Study cluster layout 1:500

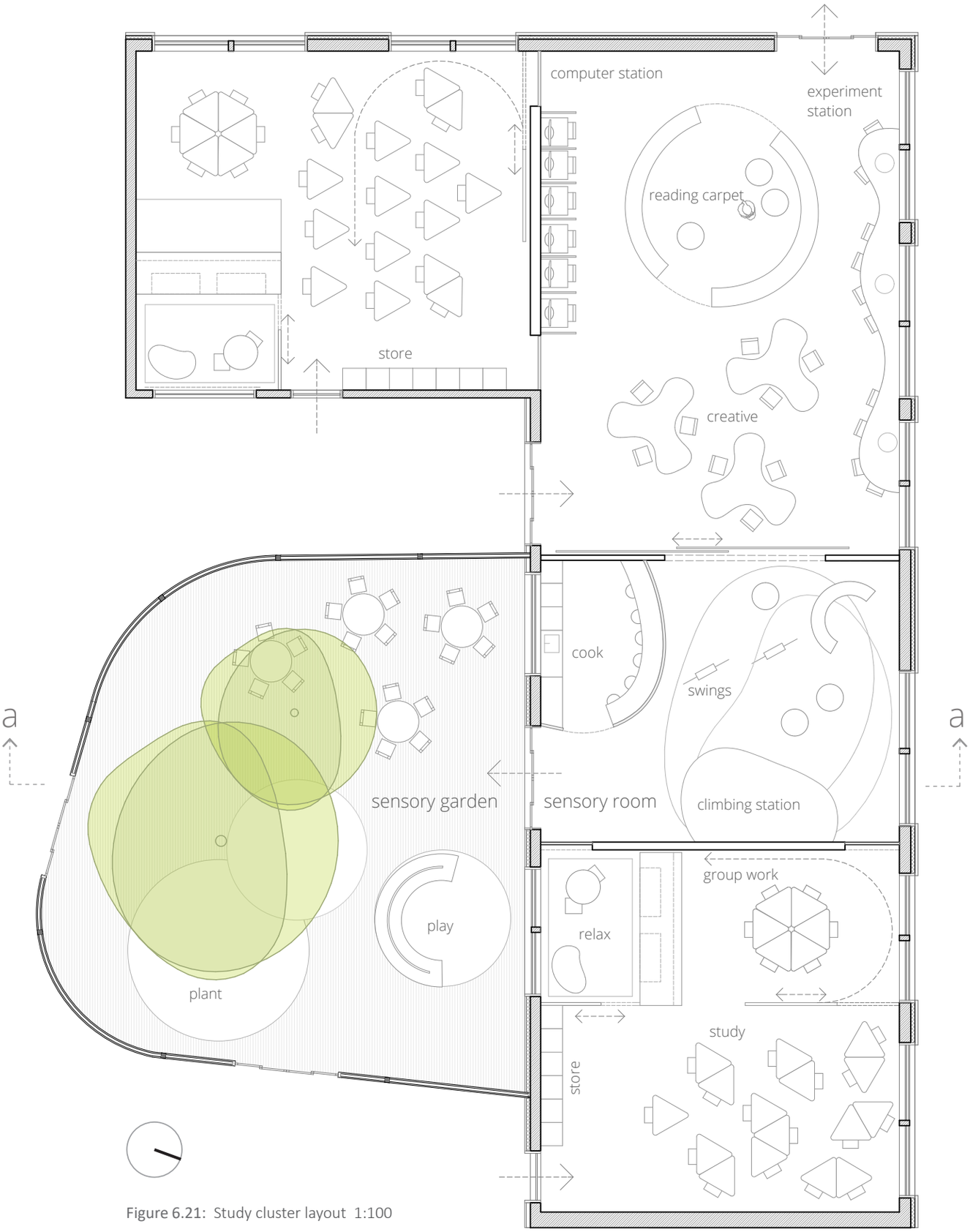


Figure 6.21: Study cluster layout 1:100

Sensory garden:

One of the main keys to successful autism-aware design is to provide direct connections to outdoor spaces. Various activities take place in these outdoor areas involving the different senses and are therefore defined as multi-sensory environments. This kind of environment is aimed at providing multiple senses with a different scale of stimulation through experience gained while playing with each other or working with plants.

A sensory garden, being a multi-sensory environment, provides opportunities for physical activity as well as for social interaction. It is also important that the sensory garden is freely accessible to children of all ages promoting self-learning and exploration.[1]

Inner courtyards, included in the building design, perfectly meet the purposes of a sensory garden. These special environments will assist children on the autistic spectrum in obtaining generalization skills through the practice of different scenarios during play and occupational therapy – planting, taking care of seeds and plants.

These outside areas are also strongly beneficial for mainstream students since they provide a safe and pleasant outside environment and an opportunity to get involved in various kinds of outdoor activities. Spending time together, while being occupied, eases the communication and integration process. From early school years children learn that they can contribute to something and achieve better results while assisting each other. This boosts self-esteem and helps to develop a self-confidence in everyday activities.

1 See Wilson 2006, 31– 32.

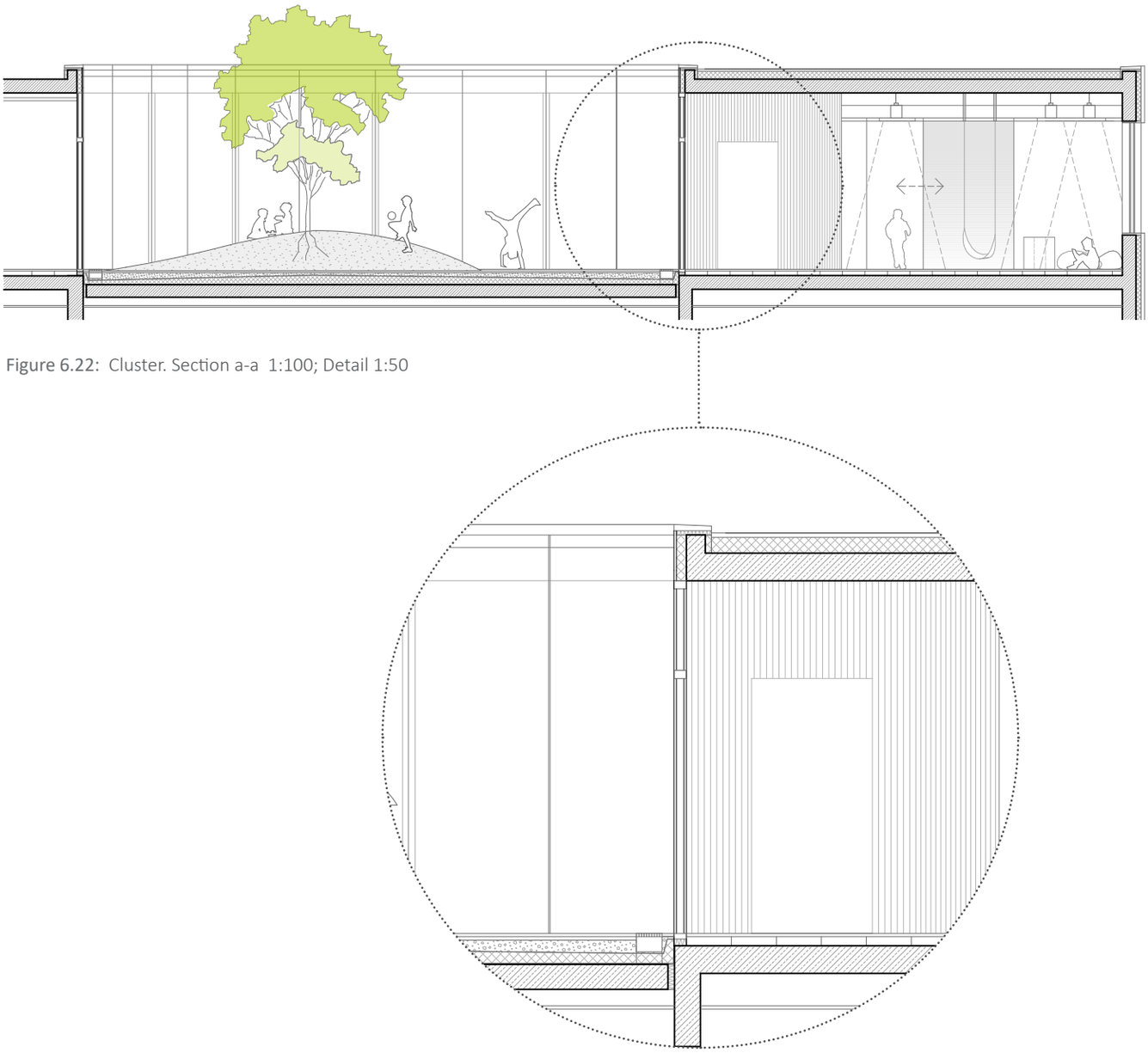


Figure 6.22: Cluster. Section a-a 1:100; Detail 1:50

Escape space :

In accordance with the principles of the Sensory Design Theory, having retreat spaces integrated into a school building is an important tool to help a child who feels overwhelmed during the class to calm down and then to rejoin the group whenever he or she is able.

It is important that this space feels cozy and safe.
In the proposed school project an escape space is designed as part of every classroom. It is separated from the classroom volume via inbuilt furniture and partitions but is still easily accessible for a child. Studies show that even a visual presence of such a room is able to reduce the anxiety levels of autistic students.[2]

All the escape spaces in the project can be customised individually in accordance with the needs of a user – the brightness of artificial lightning is regulated, adjustable roller window shades can be used to control outside views and the amount of natural light entering the space, ceiling height can be adjusted by the controllable semi-transparent fabric shade. It helps to create a more intimate atmosphere by lowering the room height and making the artificial light more dispersed. The floor level is lower compared to the floor of the classroom and has a different soft floor covering. Inbuilt furniture provides spaces for storing books and toys as well as a place to read.

2 See Mostafa 2014, 153.

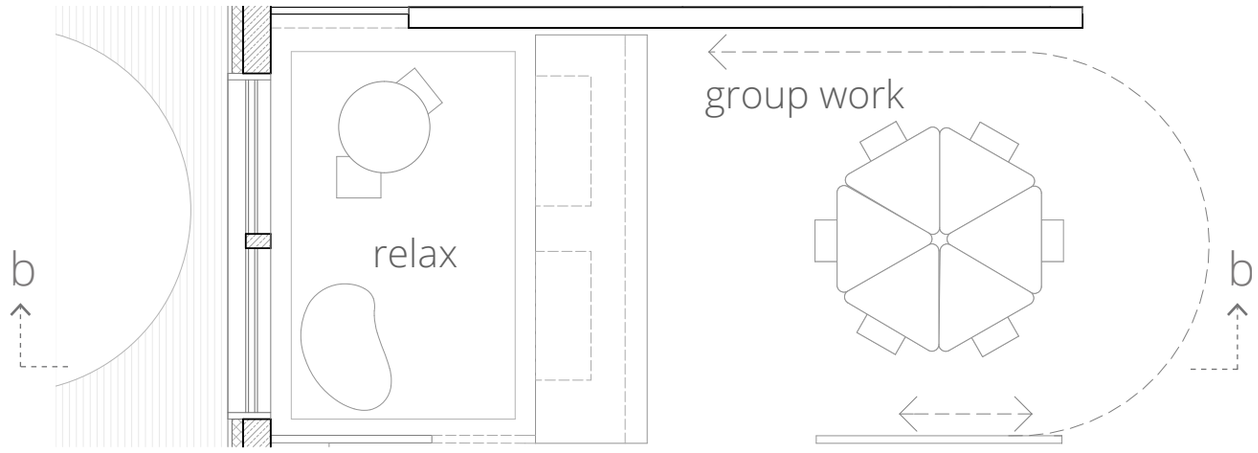


Figure 6.23: Classroom fragment. Escape space layout 1:50

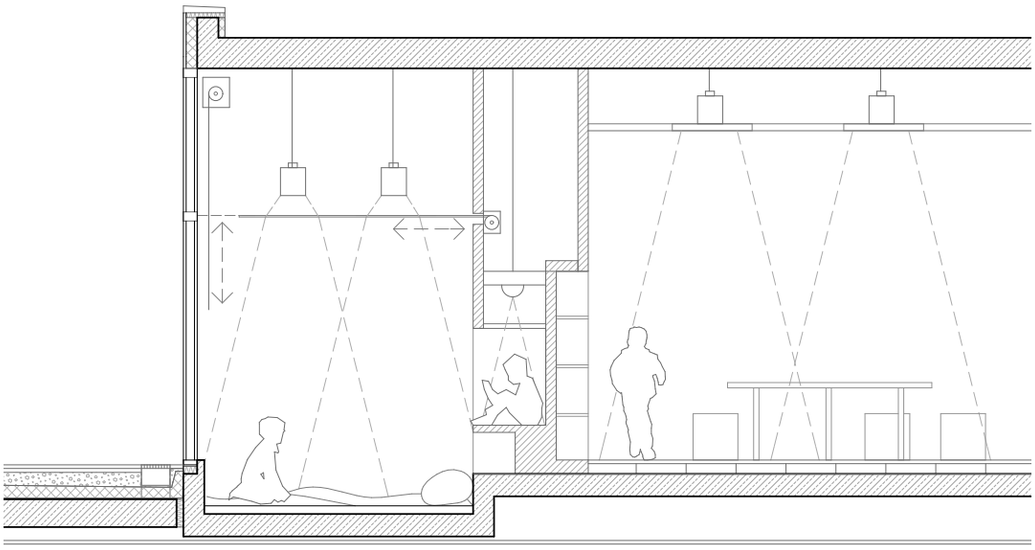


Figure 6.24: Classroom fragment. Escape space section b-b 1:50

Furniture:

Contemporary schools tend to have multifunction rooms with open-space planning. However, this is often seen as a negative in autism-aware design, since one of the biggest struggles of an autistic user is a constant feeling of being overwhelmed by too much visual information, too many noises and by overall excessive stimuli.

Since multifunctional spaces such as „learning landscape“ rooms are also required by the design task for the “Smart city” school, it has been decided to approach this problem through defining these functions according to the level of stimulation. The activities of lower stimuli such as reading, working on the computer etc. are placed close to each other and separated from the other activities by the furniture. Book shelves for the reading area are of a certain height so that a child, while standing could look over them and orientate in the space, whereas when sitting is completely separated from the rest of the room. This solution helps to minimize surrounding views as well as to reduce the overall noise level. Areas with a higher level of stimulation such as an “experiment station” could remain open.

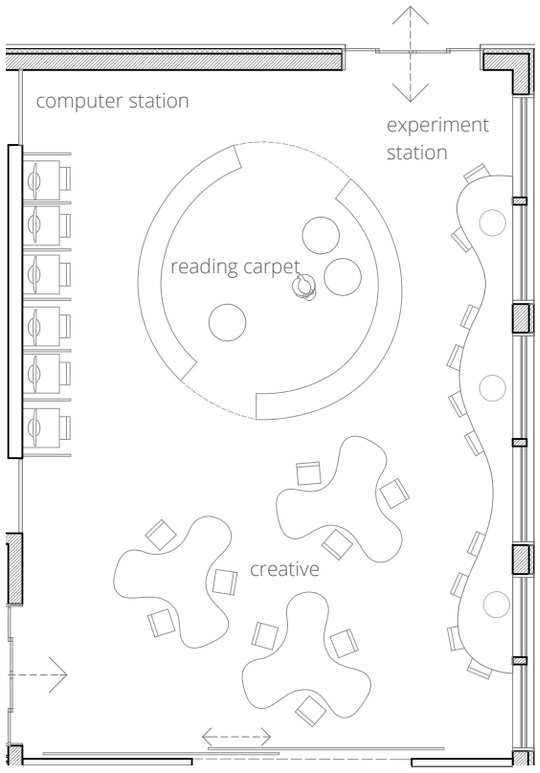


Figure 6.25: Learning landscape layout 1:100

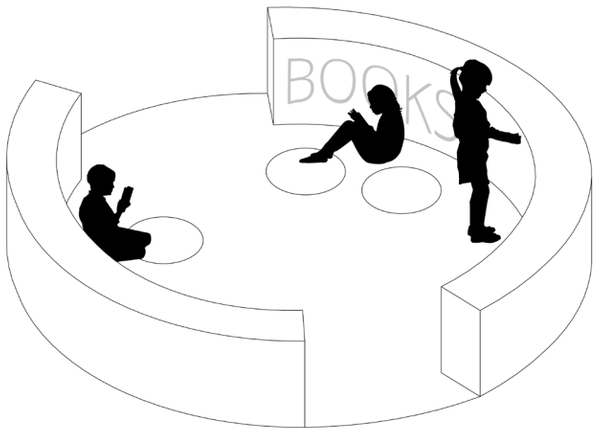


Figure 6.26: Reading area

Geometrical shapes as an indicator for a specific activity:

In contemporary schools it is important to have the possibility for caring out different learning scenarios in a classroom – individual work, work in pairs, group work. This typically requires the reorganization of the furniture, either grouping tables together or moving them further apart.

However, as discussed in chapter 2, children with autism tend to be very sensitive to any kind of change that affects the room atmosphere. In order to help these children to easier deal with this problem, it has been decided to use special modular furniture that in different combinations resembles simple geometrical shapes. These geometric shapes serve as an indicator for the upcoming activity. After learning which shape indicates which study activity children are able to mentally prepare for the lesson as soon as they enter the room. Triangle – individual work, rhombus – work in pairs, hexagon – group work etc. (Fig. 6.26)

The adjustable position of a blackboard can also be used as a recognition tool for the upcoming lesson situation.

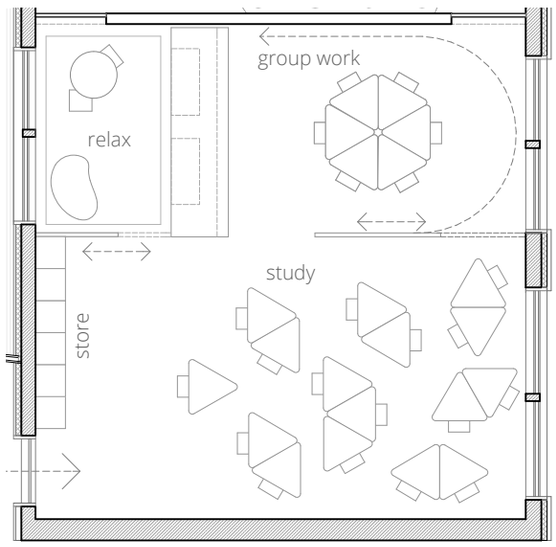
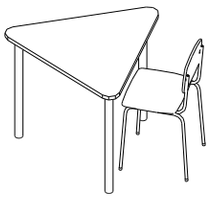
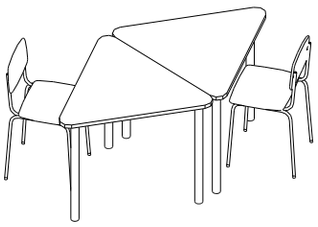


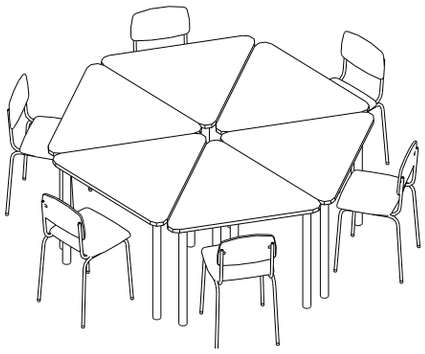
Figure 6.27: Learning landscape layout 1:100



TRIANGLE
INDIVIDUAL WORK



RHOMBUS
WORK IN PAIRS



HEXAGON
GROUP WORK

Figure 6.28: Table combinations representing the type of activity

6.4 MATERIALS AND COLOURS

Colours and textures:

According to the study conducted by Christopher Beaver (GA Architects), specific colours were chosen by children diagnosed with ASD as the most appealing. These colours are represented in a palette of the suggested hues for autism-aware design.(Fig. 6.28)[3]

Taking into consideration the strong connection of the building with nature, these calm shades of colours, used in combination with natural materials such as wood, stone, wool, fabric, create a positive environment for learning and provide a welcoming atmosphere without being overstimulating. Soft fabric surfaces and sound-absorbing materials dominate in escape spaces, inbuilt relax places and areas of low stimulation. Areas of high stimulation have light wooden materials with some rooms having rubber flooring (e.g.. sport facilities premises).

Color-coding:

Color-coding is another important tool in the design of a building when considering the special needs of autistic users. Color-coding is used to help children orientate in the building and to locate easier the rooms they need. In this project color-coding is used for cluster doors, assigning each cluster a specific colour. Important spaces in the building such as toilets and stairs are color-coded with bright shades. This contrasts them to the surrounding environment and they are thus easier for children to recognize and locate in the building.

3 See Beaver 2015, 49.

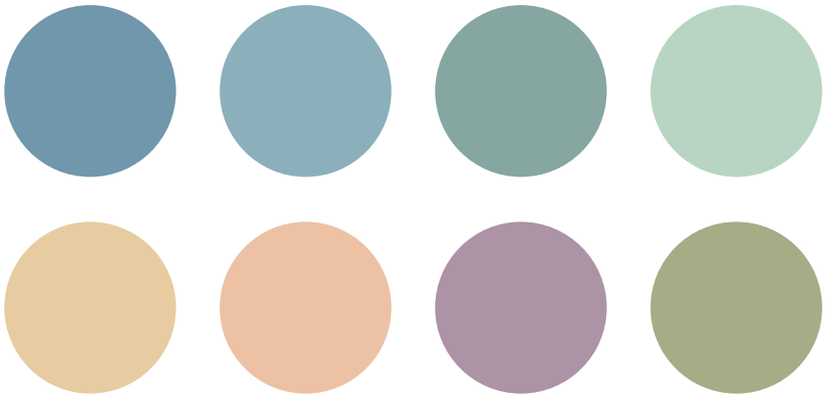


Figure 6.29: Color palette of suggested hues according to Cristopher Beaver

Figure 6.30: Textures used in the project

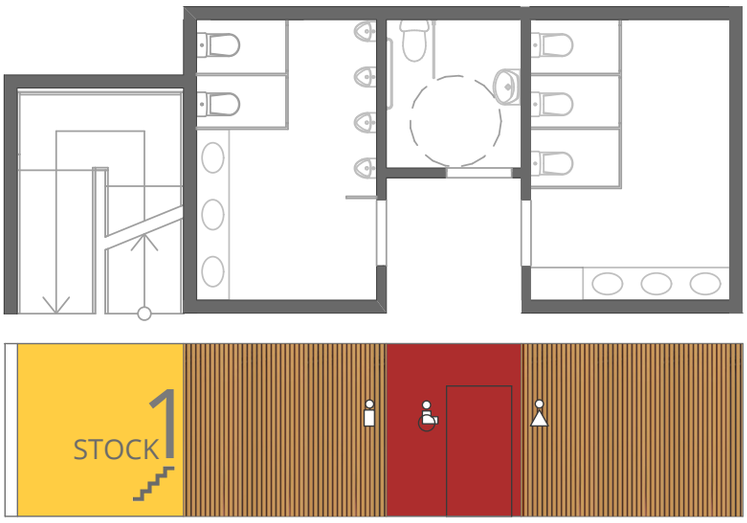


Figure 6.31: Contrasting colors for staircases and toilets help to locate these areas easily

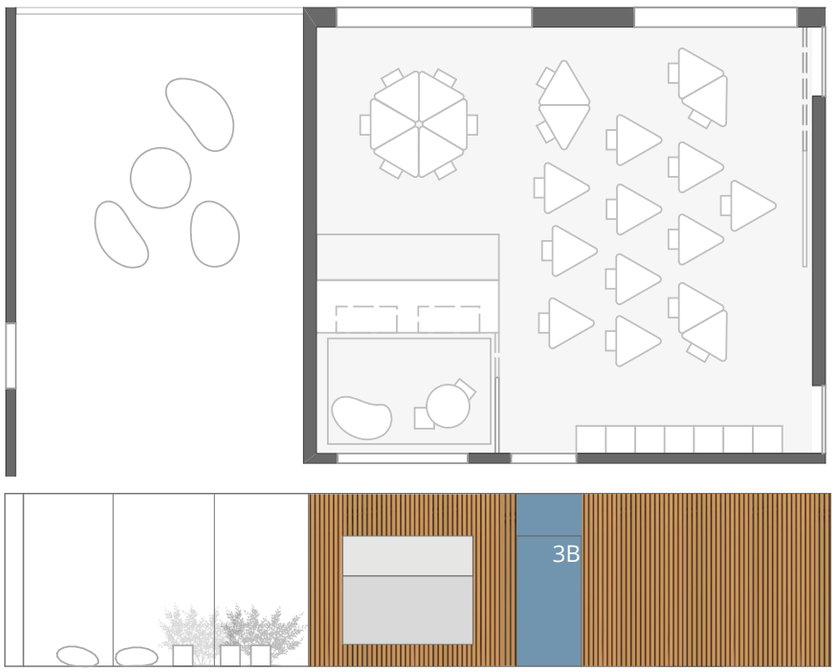


Figure 6.32: Color-coding for clusters. Each cluster has an assigned color

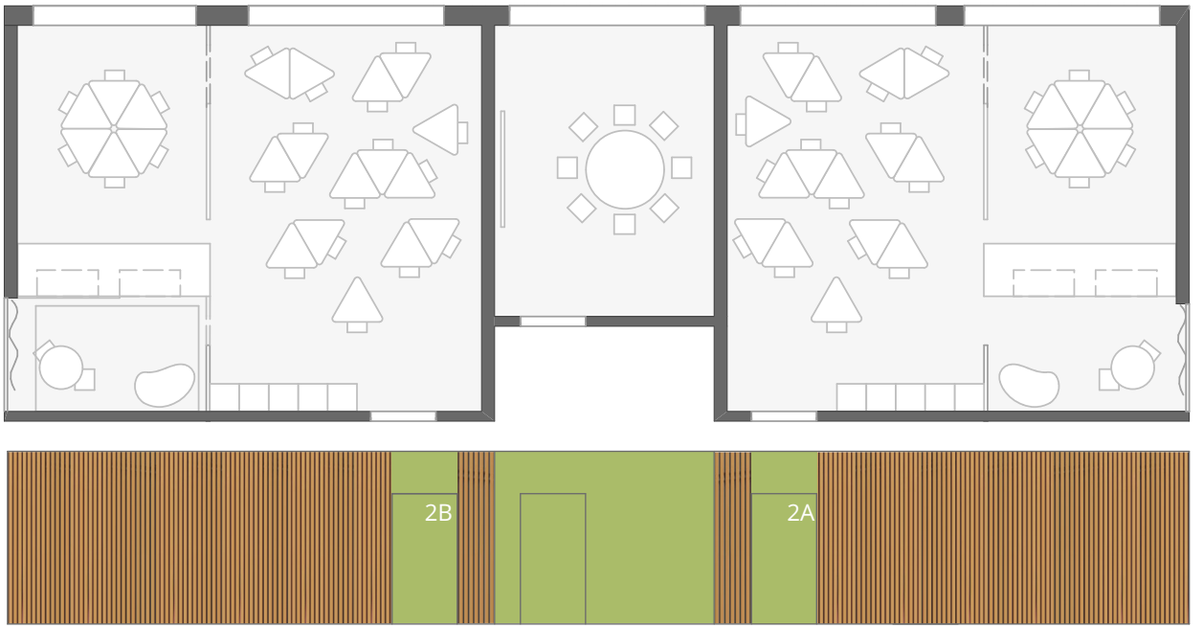


Figure 6.33: Color-coding for clusters. Each cluster has an assigned color

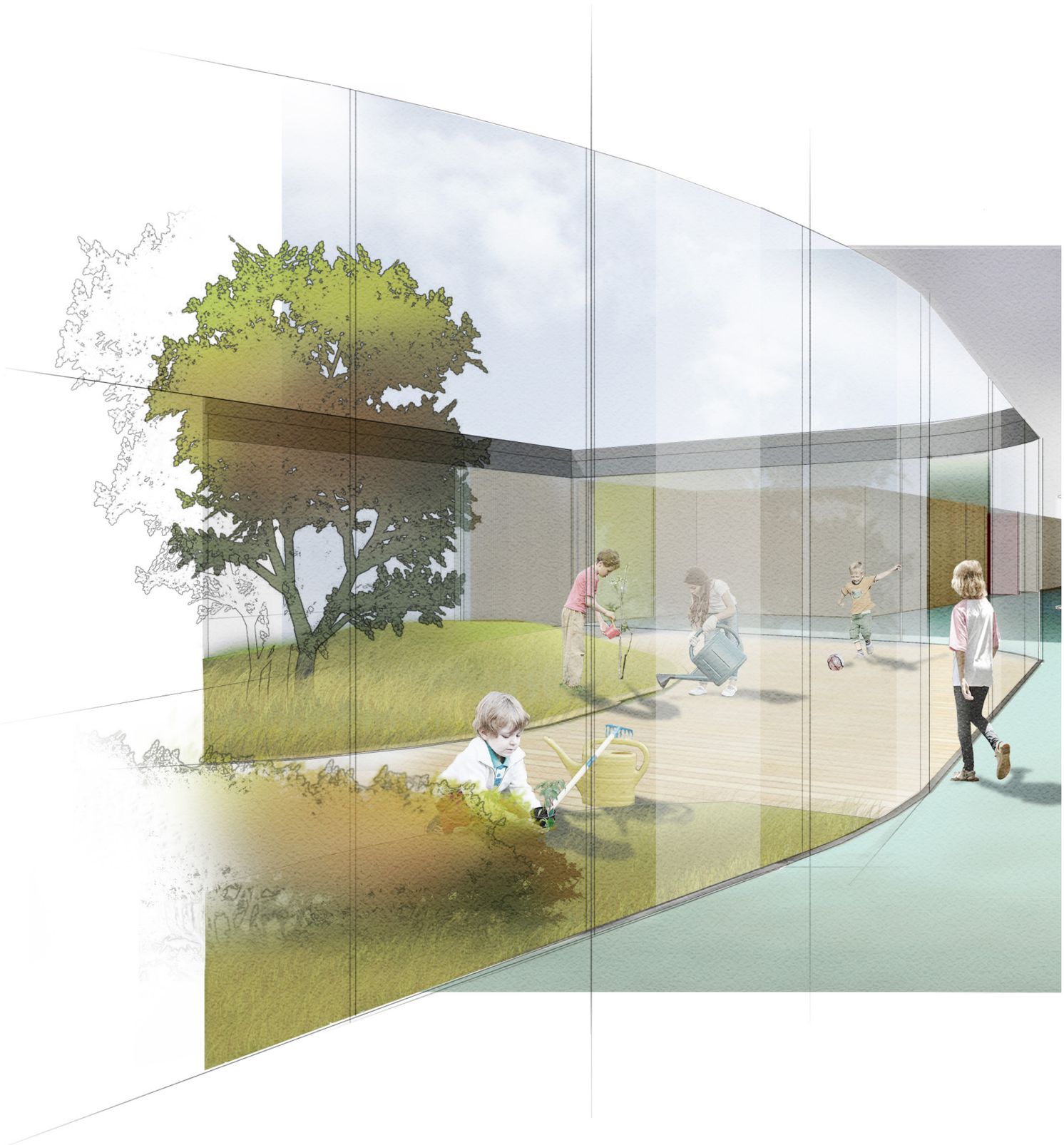


Figure 6.34: Visualization. Cluster space

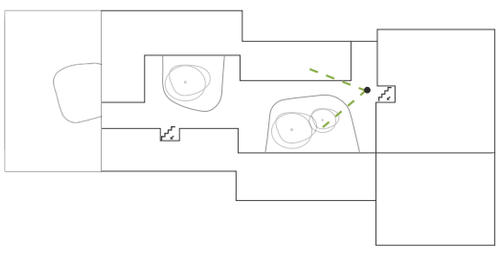


Figure 6.35: Visualization. Cluster space

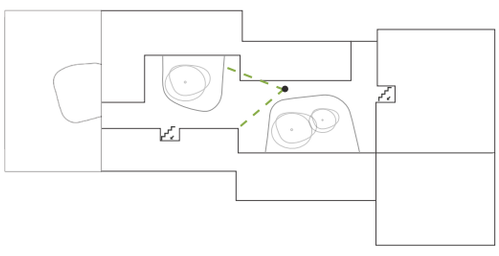


Figure 6.36: Visualization. Cluster space

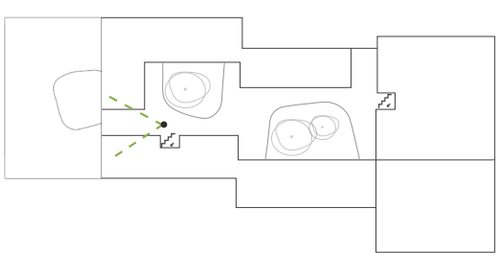


Figure 6.37: Visualization. School courtyard

7

CHAPTER

CONCLUSION & ACKNOWLEDGEMENTS

7. CONCLUSION

Due to the increasing awareness of ASD condition in modern society, the usual approaches to public building design and in particular school design must be rethought. However, during the work on this thesis it has become clear that it is extremely difficult to define which strategy for the implementation of the autism-aware design principals works best in the given situation. This results in a great variety of design solutions, that while beneficial in many aspects, might create new complications.

The main aim of the proposed design was to address the topic of safety and independence and to improve the social integration of children with ASD that attend a local public school. The solutions offered in the project should create an environment that not only serves the needs of children on the autistic spectrum but is also of benefit to the mainstream user. It was very important to create an atmosphere of inclusion and equality in the school. Therefore, all the design interventions, aimed at assisting an autistic user, are made in an unobtrusive manner, rearranging the required spaces in order to meet the needs of all children.

The building is provided with easy-to-read visual clues that help children with ASD to orientate in the building without getting overwhelmed by an excessive amount of information. Multiple areas for outdoor activities are safe and easy to access independently by every child. These areas offer not only the possibility to spent time in the fresh air but also offer a space for group work such as gardening, thus promoting communication and social interaction. Escape spaces, designed as quiet retreat areas for reading and relaxing, are built seamlessly into the overall spatial organization. These spaces are also easily accessible for every child, thus promoting the impression of inclusion.

However, it is important to mention, that most of the design solutions are at present based on theoretical assumptions. In order to confirm that these design interventions actually have a positive impact, more research work supported by practical observations and evidences based on the actual user experience is required.

I genuinely hope that this work can contribute to the rise in public awareness of the need for further research into the field of autism-aware design as well as provide a basis for future development.

ACKNOWLEDGEMENTS

Hereby I would like to thank all the people without whose help this thesis would not have been possible. I would especially like to express my gratitude to:

TU Graz and the Institute of Spatial Design for providing me with high quality education and giving me an opportunity to work on this thesis

My supervisor Irmgard Frank for putting her trust in me, inspiring and motivating me throughout the entire working process

Mrs. G for contributing to this work by providing me with useful information and sharing her experience

Markus Goll who accompanied and supported during the whole process

My parents for supporting and encouraging me through my years of study

APPENDIX

APPENDIX A

Interview with Mrs. G.

Date: 16.10.2017
Conducted by: Iana Totikashvili

The following interview was held in German.
Therefore, the script below is written in the original language. While most of the conversation happened as written, minor parts were altered for better comprehension. Author's comments are indicated by square brackets e.g. "[example]".

I.T.: Was für eine Ausbildung haben Sie gemacht?

Mrs. G.: Als Grundausbildung bin ich für Sonderpädagogik ausgebildet, als Sonderschullehrer, als Sprachheillehrer. Ich habe eine Ausbildung als Beratungslehrer für interkulturelles Lernen, eine Mentorin-Ausbildung und ich habe meinen Master geschrieben. Das ist meine Grundausbildung. Die für schwerstbehinderte Kinder war damals eine Kombinationsausbildung.

I.T.: Haben Sie eine Autismus-spezifische Ausbildung oder Weiterbildung gemacht?

Mrs. G.: Ja, eine Fortbildung für den autistischen Bereich. Meine Grundausbildung ist Sonderpädagogik und da sind die Kinder mit Autismus oder Kinder mit besonderen, speziellen Bedürfnissen ein Schwerpunkt, mit ihren jeweiligen Behinderungen, und eins davon ist eben Autismus. Nachdem ich jetzt ein paar Jahre mit autistischen Kindern vermehrt zu tun habe, habe ich natürlich in diesem Bereich Fortbildungen besucht.

I.T.: In der Klasse, in der Sie jetzt arbeiten, haben Sie auch Kinder mit Autismus?

Mrs. G.: Drei. Drei Schüler die eine autistische Diagnose haben.

I.T.: Haben diese Kinder unterschiedliche Formen von Autismus?

Mrs. G.: Genau, ein Kind hat Asberger Autismus und 2 Kinder haben ein allgemeineres Bild. Sie haben vermehrt autistische Züge und beide sind diagnostiziert als Autistinnen, aber nicht klar einzuordnen, da sie auch noch stark entwicklungsverzögert sind.

I.T.: Es gibt ja ein großes Autismus Spektrum mit sehr vielen Punkten und es ist manchmal sehr schwer Kinder zuzuordnen. Glauben Sie, hat sich die Anzahl an Kindern mit Autismus während der letzten Jahre geändert?

Mrs. G.: Es hat sicher, […] der Autismus hat auf jedem Fall zugenommen bzw. wird einfach häufiger diagnostiziert. Ob er wirklich zugenommen hat, das weiß ich nicht, aber es gibt immer so „Trend-Behinderungen" ,unter Anführungszeichen, vor etlichen Jahren war es ADHS, das Hyperaktivitätssyndrom. Und mittlerweile, ist das aus meiner Sicht fast vom Autismus abgelöst worden. Obwohl sie komplett unterschiedliche Erscheinungsbilder haben. Aber wie gesagt, jetzt ist man momentan sehr schnell bei der Autismus-Diagnose.

I.T.: Können Sie sagen, dass Sie irgendwelche besondere Schwierigkeiten beim Unterrichten in dieser Klasse mit autistischen Kindern haben?

Mrs. G.: Naja, man muss sich natürlich auf ihre speziellen Bedürfnisse einstellen und Rahmenbedingungen schaffen. Und ihnen natürlich auch von der Methode, von der Unterrichtsmethode, von der didaktischen Methode, einen Schritt weit entgegenkommen. Ein ganz großes Thema ist die Visualisierung für diese Menschen. Ja, und wenn man diese Spielregeln beachtet, dann ist Unterricht in einer größeren Gruppe möglich. Nicht geeignet sind alle methodisch-didaktischen Formen der Freiarbeit.

I.T.: Finden Sie, dass die Kinder auch außerhalb des Unterrichts einen besonderen Zugang und mehr Aufmerksamkeit benötigen als die anderen Kinder? Also während der Pausen etc.?

Mrs. G.: Ja, das hängt wieder von der Gestaltung einer Pause ab. Wenn ich die Kinder einfach ganz ungelenkt spielen lasse. Dann muss ich sie auf alle Fälle gut beobachten und ich muss ihnen aber auch Rückzugsräume bereitstellen, weil sie einfach auch sehr ansprechbar auf Lärmpegel sind, oder auf Überreizung, oder auf zu enge Körperkontakt-Konfrontationen. Das hängt natürlich auch von der Größe des Pausenhofes ab, oder von [den Orten] wo auch eine ungelenkte Situation stattfinden soll. Es gibt einfach keine Relation dazu, wie viel Raum ein autistischer Mensch braucht, damit er sich wohlfühlen kann

I.T.: In ASPECTSS (Entwurfskonzept für autistische Kinder) gibt es ein besonderes Konzept, das sogenannte „Sicherheitseck", wo sich Kinder prinzipiell auch während des Unterrichts verstecken können, aber so, dass der Lehrer sie trotzdem noch immer beobachten kann. Finden Sie, dass das ein guter Zugang für autistische Kinder ist? Brauchen sie das?

Mrs. G.: Ein Rückzugsort! So ein Time-Out-Ort, das wäre auf alle Fälle sehr wünschenswert. Ich glaube zu wissen, dass das im Moment bei uns in der Integration und Inklusion bei weitem noch nicht von den Rahmenbedingungen her gegeben ist. Das heißt, es würde diesen Menschen sehr wohl entsprechen, aber die einzelnen Schulstandorte können das nicht sicherstellen. Aber es würde Sinn machen. Auch kleine Räume zu haben, wo sie das Gefühl haben, für sich sein zu können, während ein Pädagoge trotzdem einen Blick auf sie hat. Da wäre natürlich, wenn wir gleich bei der Architektur bleiben, Glas wahrscheinlich sinnvoll.

I.T.: Welche besonderen Schwierigkeiten haben die Kinder mit Autismus beim Lernen. Was ist für sie am schwersten?

Mrs. G.: Prinzipiell sind sie einfach im Inneren chaotisch angeordnet. Das heißt sie haben [sehr wohl] Aufmerksamkeit, Fokussierung. Sie haben auch spezielle Inselbegabungen, dass sie etwas besonders gut können. Dass sie zum Beispiel nur ganz kurz Blickkontakt halten, aber im kurzen Blickkontakt trotzdem alles wahrnehmen können. Also das sind auch große Fähigkeiten, auf die wir uns auch einzustellen haben, welche für uns befremdlich sind. Wir denken, wenn uns jemand nicht anschaut beim Sprechen, dass der nicht aufmerksam ist. Das ist aber nicht der Fall bei autistischen Kindern. Also das heißt, sie haben auch sehr unterschiedliche Erscheinungsbilder. Sie haben vor allem natürlich in der Kommunikation, der Interaktion ein Problem, sich ihres Zustands auszudrücken. Bei uns ist das so, dass ein Mädchen von drei extrem Probleme hat, sich überhaupt zu artikulieren.

I.T.: Wenn sie sagen dass diese Kinder chaotisch im Inneren sind, heißt das, dass eine strikte Reihenfolge während des Tages dabei helfen könnte?

Mrs. G.: Ist notwendig. Ja da gibt's verschiedene Ansätze, das haben Sie sicher gelesen, das TEACCH, oder das ABA, kennen Sie wahrscheinlich auch. ABA, das ist so eine analytische Verhaltensanalyse. Da gibt's

auch unterschiedliche Zugänge. Manche sagen, das ist Dressur des Kindes. Andere sagen, das ist eine ganz effiziente Methode. Da gibt's unterschiedliche Zugänge. Und dann gibt's auch die sogenannte PECS-Methode, da geht's viel ums Visualisieren, darum zusätzlich Piktogramme anzubringen, damit sie sich einfach besser orientieren können. Fixplätze und die Arbeit mit Farben und Bild stehen da im Vordergrund.

I.T.: Ok, und was müssen Sie persönlich unternehmen um die Aufmerksamkeit dieser Kinder zu erhöhen? Also was machen Sie, damit die Kinder während des Unterrichts doch aufmerksam bleiben?

Mrs. G.: Ich mache eine "Mischkulanz" aus diesen Ansätzen, welche auch wissenschaftlich belegt, und in der Literatur vorhanden sind. Ich arbeite sehr viel mit Bildmaterial, mit visueller Unterstützung. Wir haben einen klar ritualisierten Tagesablauf. Die Kinder haben ihren fixen Sitzplatz, der ihnen zugewiesen ist, der in manchen Unterrichtssituationen schon aufgelöst oder verändert wird, aber in Wahrheit sitzen sie jetzt das dritte Jahr immer an ihrem Stammplatz. Eine Reduktion am Arbeitsplatz zum Beispiel [ist wichtig], das heißt man hat ganz klar definiert: Wo liegt die Federschachtel? Wo liegt mein Block? Ganz wenig in den Fächern zu haben, also nur den Zeichenblock und das Jausenset. Nicht viele Dinge auf einem Ort ungeordnet [zu haben], sondern gut in Fächern geordnet und strukturiert. Also Struktur ist eine wesentliche Hilfestellung, damit's gelingen kann. Nämlich auch, damit sie zu einer Selbstständigkeit in ihrer Tätigkeit kommen.

I.T.: Super, das ist eigentlich genau, was ich hören wollte. Was ich noch gerne fragen würde: Haben Sie das Gefühl, dass Sie eine ausreichende Unterstützung von der Schulleitung beim Unterrichten bekommen? Ich meine, ich verstehe, diesen Zugang haben Sie quasi während der Arbeit mit dieser Klasse selbst entwickelt, aber nimmt die Schulleitung auch Teil in diesem Prozess? Bekommen Sie Hilfe?

Mrs. G.: Ja von unserer Schulleitung nicht. Aber es gibt sicher Schulstandorte, wo das so ist. Das hängt immer von der Person des Schulleiters oder der Schulleiterin ab, wie sehr sie sich auch mit Kindern mit speziellen Bedürfnissen in ihrer Schulkultur beschäftigt.

I.T.: Zum Beispiel Spezialisten einzuladen?

Mrs. G.: Genau. Das hängt natürlich auch ein bisschen, sozusagen, mit der Anzahl der Bedürfnisse vom Lehrkörper ab. Unser Schwerpunk, unsere Fokussierung liegt sicher auf der Fremdsprachigkeit, auf den Kindern mit Migrationshintergrund. Das heißt, nicht auf Downsyndrom, da haben wir ein Kind, und nicht auf Autismus, weil da haben wir, insgesamt in der ganzen Schule fünf oder sechs SchülerInnen. Das heißt, das hängt immer damit zusammen, wo der Schwerpunkt der Schule hängt, und dann wird man da auch dementsprechend etwas aufwenden. Aber der Lehrer, der Pädagoge, der damit zu tun hat, ist angehalten, sich mit dieser Problematik im Eigeninteresse fortzubilden und sich damit auseinanderzusetzen.

I.T.: Es ist dann quasi die eigene Sache des Lehrers, sich selbst zu bemühen, um gute Leistungen zu bringen?

Mrs. G.: Ja, genau.

I.T.: Finden Sie, dass der gegebene Klassenraum die Bedürfnisse aller Kinder während des Unterrichts erfüllt, oder müssen sie selbst etwas ändern, damit es besser passt?

Mrs. G.: Natürlich haben wir, als wir im Team, meine Kollegin und ich, gemeinsam gewusst haben, dass wir diese Klasse übernehmen, überlegt [wie wir und vorbereiten]. Zum Beispiel wie viel Platz wir den Autisten einräumen, sozusagen. Das ist schon in der Vorüberlegung mit enthalten. Wir können den Raum natürlich nicht wirklich verändern. Wir haben äußere Gege-

benheiten, aber dann gilt es schon Dinge zu überlegen. Zum Beispiel haben die autistischen Kinder [die Möglichkeit] hier hereinzukommen in diesen kleinen [Neben-] Raum, um sich zu entspannen. Es ist jetzt nicht das Ziel, dass sie ständig herinnen sind. Es ist aber wichtig solche Dinge zu überlegen, wenn man weiß, man wird mit solchen Kindern oder Menschen konfrontiert.

I.T.: Und wenn es die Möglichkeit gäbe den Raum komplett umzuändern, was würden sie besser machen, oder was fehlt?

Mrs. G.: Naja, ich denke ganz günstig wären auch mobile Trennwände, oder verschiebbare Trennwände. Damit man nach Bedarf und nach Tagesverfassung diesen Rückzugsort schneller und effizienter schaffen kann. Wenn das Geld reicht, wären natürlich eigene, kleine Rückzugskojen das Beste, weil dort dann auch der Lärm abgeschottet ist. Ja, dann die Einrichtung: Es wäre natürlich toll, wenn sie dann ein eigenes Fach hätten, wo man dann visualisiert mit bunten Karten, klar getrennt die Unterrichtsfächer anschreiben kann, um mit ihnen gemeinsam eine Struktur zu erarbeiten. Damit sie sich am Arbeitsplatz wohlfühlen. Diesen Platz haben wir zum Beispiel nicht im Moment. Das heißt, ich verwalte die Schulsachen der Kinder und gebe es ihnen, sozusagen in Reduktion, nur wenn sie in dieser Arbeitssituation sind, vor. Toll wäre es natürlich, wenn da Platz wäre: Jeder hat sein Regal, mit Fächern, oder mit der Möglichkeit es zu beschriften.

I.T.: Und außerhalb des Klassenraums, wenn das Kind zum Beispiel aufs Klo oder wohin anders geht, kann es das selbst machen oder benötigt es Hilfe dabei?

Mrs. G.: Ja, das ist wieder je nachdem, wie das Bauwerk angeordnet ist. Für autistische Kinder ist es natürlich toll, wenn Waschraum bzw. Toilette sehr nah gelegen sind, und das kann man dann auch mit Schildern beschriften.

I.T.: Color-code

Mrs. G.: Genau. Ich denke mir, wenn hier wirklich mehrere [ASD] Schüler wären, dann könnte der Weg nach oben [zum Klo] am Boden mit Farben markiert werden, damit sie sich leichter orientieren. Ich denke mir, nach einer gewissen Trainingszeit [orientieren sich die Kinder selbstständig]. Das war bei unseren autistischen Kindern ebenso. Wenn man bei unserer Klassentür hinausgeht, ist gleich links die Toilette. Die ersten zwei Monate wurden die Kinder begleitet und mittlerweile gehen sie alleine auf die Toilette. Und da ist das natürlich auch angebracht.

I.T.: Das erhöht sozusagen die Selbstständigkeit dieser Kinder, damit sie auch außerhalb der Schule selbstständiger werden.

Mrs. G.: Genau, also ich würde mir schon wünschen, wenn im schulischen Kontext diese Dinge wieder reduziert werden, diese visuellen. Ich denke mir, die Menschen müssen sich auch draußen im öffentlichen Raum bewegen können und da müssen sie dann auch [auf] vielerlei verzichten. Das heißt, zuerst anbieten, in dem Arbeitsumfeld, in dem sie sind, und dann doch dort auch wieder reduzieren, damit das [Erlernte], nicht verloren geht.

I.T.: Damit sie nicht in diesen Greenhouse-Effekt fallen.

Mrs. G.: Genau.

I.T.: Finden Sie generell, dass die Integration von Kindern mit Autismus wichtig ist? Wir haben schon ein wenig darüber geredet. Genauer: Müssen sie über-

haupt integriert werden? Denn es gibt einen psychologischen Zugang, der besagt, dass diese Kinder gleichbehandelt werden sollen wie alle anderen. Erwachsene und Lehrer sollen quasi ignorieren, dass sie andere Bedürfnisse haben, damit die Kinder sich mit der Zeit daran gewöhnen, und nicht merken, dass sie sich irgendwie unterscheiden. Glauben Sie, wäre das ein besserer Zugang, oder eben nicht?

Mrs. G.: Ich glaube, dass Integration für diese Kinder sehr wichtig ist, wobei ich glaube, dass man nicht auf die Einzelsitzung, oder Einzeltherapie, verzichten kann. Ich glaube, da muss man wirklich parallel fahren. Das heißt, Kinder sehr wohl in einer Großgruppe beschulen, aber ich glaube, dass Kinder und Jugendliche, oder Menschen mit Autismus überhaupt, diese Einzelansprachen, dieses Training brauchen. Sozusagen ergänzend, da sich beides ergänzen soll und eigentlich muss.

I.T.: Gibt es irgendwelche Integrationsprogramme der Schule oder des Staates, die gefördert sind? Vielleicht haben sie darüber gehört.

Mrs. G.: Ja es gibt natürlich Institutionen, die sich auf autistische Störungen, auf autistische Diagnostik spezialisiert haben, aber auch auf Förderungskonzepte schlussendlich, um die Integration in den Schulen zu unterstützen. Ja, es gibt zum Beispiel „Libelle“ in Graz, eine Institution die unterstützt. Die hat sich auf Autismus spezialisiert und bietet auch Therapie an. Die Problematik ist wie in vielen Bereichen, dass das in den letzten Jahren einfach von den Eltern zu bezahlen ist. Das sind dann natürlich Kosten für die Eltern und da wird’s dann wieder “happig“. Wer kann sich das leisten? Wer will sich das leisten? Und wer macht das mit seinem Kind nicht?

I.T.: Bieten sie [Libelle] auch Kurse für Lehrer und Eltern an? Weil Eltern müssen auch selbst wissen, wie sie mit ihrem Kind umgehen sollen.

Mrs. G.: Ja, genau. Also in diesem Kurs bei der „Libelle“ zum Beispiel, bei diesen Organisationen, wird immer der Ansatz in der Familie gesucht. Also ein familientherapeutischer Ansatz, oft kombiniert auch mit Gesprächstherapie. Das heißt, die Familie wird immer mit einbezogen. Da werden Eltern auch aufgeklärt. Das ist sozusagen ein Diagnosezentrum, da werden die Eltern das erste Mal [mit Autismus] konfrontiert. Oft wissen Eltern schon intuitiv, dass etwas nicht mit ihrem Kind stimmt. Dort wird auch mit Erwachsenen gearbeitet, um sie zum Beispiel ins Berufsleben zu integrieren. Natürlich muss man sich mit der Firma kurzschließen und vernetzen, weil’s ja einfach gewisse Bedürfnisse abzudecken gilt, und so ist es auch mit den Schulstandorten. Also ich habe Kontakt mit der Therapeutin von meinen Schülern. Wir sprechen mindestens zweimal im Semester, um abzuklären wo ihr Fokus mit den Kindern im Moment liegt, und dass ich nicht irgendetwas mache, sondern dass wir uns abstimmen.

I.T.: Und die Eltern bemühen sich auch in diesem Prozess.?

Mrs. G.: Genau. Die sind natürlich einerseits von uns, von schulischer Seite, informiert, aber natürlich werden sie auch von der therapeutischen Seite informiert, wie wir mit ihrem Kind arbeiten.

I.T.: Das ist sehr interessant, dass es so etwas gibt. Aber Sie haben gesagt, dass es jetzt nicht mehr so ist.

Mrs. G.: Naja, das ist natürlich so, dass früher oft auch angeraten wurde, dass Kinder dort Nachmittagskurse belegen, wo mit ihnen in Kleingruppe gearbeitet wird. Sie haben aus unserer Sicht auch oft Probleme, sich an Regeln zu halten und da kann man das sehr gut trainieren und reflektieren. Eine autistische Schülerin von

uns bekommt eine Mappe, und wenn sie sich an gewisse Klassenregeln, die erarbeitet wurden, nicht hält, dann schreibe ich das der Therapeutin und die macht das in ihrer nächsten Sitzung, arbeitet mit ihr, redet mit ihr. Denn wir haben die Zeit in der Schule einfach nicht, die Dinge immer in Ruhe aufzuarbeiten und zu besprechen.

I.T.: Gut, vielen Dank. Das ist allgemein alles, was ich erfragen wollte

Mrs. G.: In Bezug auf Architektur würde ich mir noch denken, dürfte es nicht zu bunt sein.

I.T.: Ja, weil das einfach störend ist.

Mrs. G.: Ja, weil es manchmal, was ja im Moment auch lustig ist, störend ist. Aber ich glaube, man sollte insgesamt bei Kindergärten und Schulen von diesem kunterbunten „Pippi Langstrumpf"-Haus wegkommen. Das ist eine Scheinwelt, das ist jetzt meine persönliche Meinung, und man sollte von dieser Scheinwelt wegkommen und eher zur Reduktion und Dekoration kommen.

I.T.: Ja, ich habe mir eher überlegt, dass zum Beispiel, nach Magda Mustafa, […] die visuelle Unterscheidung sehr wichtig für diese Kinder ist. Aber es soll nicht zu störend sein. Das raubt die Aufmerksamkeit, da die Kinder sehr leicht abgelenkt werden. Dadurch habe ich zum Beispiel gedacht, es wäre gut, das Gebäude in Zonen zu unterteilen, die sich durch ihre Materialien unterscheiden, natürliche Materialien wie Holz oder Stein. Dadurch wissen die Kinder, wenn sie ein bestimmtes Muster oder eine Wandfarbe sehen, in welchem Gebäudeteil sie sich befinden.

Mrs. G.: Ich bin jetzt hellhörig geworden bei „Muster", das haben Sie sicher auch schon gelesen, dass diese Kinder oft eine große Imagination haben und da ist alles, was zum Beispiel in Richtung visuelle Täuschung oder Faszination geht, ablenkend. Da muss man aufpassen, da kann man sie sehr ablenken. Also das heißt alles, was kariert ist oder mit Kreisen und so, das könnte ungünstig sein, aus meiner Erfahrung. Da würde ich eher mit Pastell arbeiten und Materialien finde ich sehr gut: Holz, Glas, verschiedene Strukturen. Aber nichts worin man sich verfangen kann.

I.T.: Genau. Vielen Dank für das Gespräch.

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