



The  
University  
Of  
Sheffield.

School of Architecture

# **Sustainable schools as the 'third teacher'**

Creating a design framework for sustainable schools in Serbia, learning from practices in England, Germany and Spain

Design portfolio

Thesis submitted for the  
Degree of Doctor of Philosophy

By Marta Brković

Sheffield,  
United Kingdom  
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## Introduction

The design portfolio should be read together with the thesis. While the most important design parts of this research are explained through text and illustrated with a few photos or graphs in the thesis, in the design portfolio they are elaborated much further visually and graphically.

In the design portfolio firstly the parts of the Spector game could be found: game rules (p. 1), game cards (p. 2), and game board (p. 3). They correspond to the description of the Spector game in the chapter 5 of the thesis (p. 68 – 75).

So that the teachers' and pupils' comments, recommendations for improvement, and photos are connected to the spaces in schools to which they correspond, Sustainability HotSpots Analysis Maps were made for each school explored under this study. On the maps general comments were places outside the schools plans, while place specific comments were mapped together with photo(s) on the corresponding place on the school plan. They can be found in the design portfolio (p. 4 - 9), and should be read together with chapter 5 (p. 80) so that the data analysis process is better understood, as well as with the analysis in chapter 6 (p. 92 - 147), so it is made clear how the conclusions derived are resting on participants' comments and photos.

The last part of design portfolio consists of a series of design ideas for transforming Simeon Aranicki school from Serbia into a more sustainable and pedagogically valuable one. Planned design interventions could be found on the map of design ideas (p. 10).

Each of the design ideas that will be presented in this portfolio (p. 11 - 37) should be read together with their description and explanation in the thesis in chapter 8 (p. 188 - 213). Taking into consideration the location - actors – activities framework for each design idea, firstly important contextual or location parameters were explored: educational goals, local sustainable development goals, and micro and macro location challenges. Secondly, actors' or teachers' and pupils' criticism and ideas for improvement were explained. In the thesis they are presented in the form of a text, and in the design portfolio in the form of a graph. In both the thesis and the design portfolio they could be found under the heading "researching the issues".

The second step of presenting the design ideas in both the thesis and the design portfolio could be found under the heading "developing the ideas". In the thesis the ideas were described, while in the design portfolio a photo collaged rendering was placed as the visual representation of each idea. On the photo collaged renderings local motives that inspired the design were mapped, together with teachers and pupils evaluation and comments about the design proposals. Beside the renderings sketches of teaching/learning activities taking place in newly designed and proposed spaces were shown. Using the key messages from the analysis it is suggested how each of newly designed spaces, together with the actors taking part in proposed activities, could act pedagogically.

# GAME RULES



So who can be Spector? Answer the questions below and you will find out!

## HAVE YOU EVER LEARNED ABOUT SUSTAINABILITY?

IF YES-GREAT! YOU ARE ONE STEP CLOSER TO BECOME SPECTOR. IF NO-NO WORRIES. SUSTAINABILITY HAS TO DO WITH SO MANY THINGS FROM OUR EVERYDAY LIFE. IT HAS TO DO WITH HOW SAFE AND SECURE WE FEEL; ARE WE HEALTHY; DO WE PRACTICE ENOUGH; WHAT KIND OF FOOD DO WE EATH; DO WE RESPECT OUR FAMILY, NEIGHBOURS AND PEOPLE FROM DIFFERENT CULTURES; DO WE FEEL RESPECTED; CAN WE EXPRESS OUR OPINIONS FREELY; HOW DO WE FEEL IN OUR HOME OR SCHOOL; DO WE LIKE THEM AND ARE WE ATTACHED TO THEM; HOW GOOD OUR EDUCATION IS; DO WE SAVE ENERGY AND WATER; HOW DO WE TRAVEL TO SCHOOL AND WORK; WHAT NEW TECHNOLOGIES WE USE; AND LASTLY HOW MUCH MONEY WE SPEND ON ALL WE DO? SO NOW YOU KNOW.

## DO YOU HAVE A SHARP EYE?

IF YOUR ANSWER IS YES YOU ARE ALMOST READY.

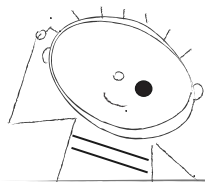
## WOULD YOU LIKE TO FIND OUT HOW SUSTAINABLE IS YOUR SCHOOL?

IF HERE AGAIN YOUR ANSWER IS YES, YOU ARE REDY TO BECOME SPECTOR! DECDE WOULD YOU LIKE TO DO THE INSPECTION ALONE OR CHOOSE A PARTNER. SPECTOR-SUSTAINABILITY INSPECTOR GAME IS PLAYED THROUGH 4 SIMPLE STEPS.

READ THEM NOW AND LET'S PLAY!

## 1. SUSPECT

TAKE A CARD FROM A STASH WITH "SUSPECTED" THEMES. ON THE CARD YOU WILL SEE "Think about" FIELD. THIS FIELD EXPLAINS THE SUSPECTED TOPIC. THINK ABOUT THE TOPIC AND DISCUSS IT WITH YOUR PEERS.



## 2. INSPECT

READ "Answer and photograph" FIELD FROM YOUR CARD. HERE YOUR TOUGHEST WEAPON IS YOUR PHOTO CAMERA - SO GRAB ONE AND SHOOT!!! PHOTOGRAPH YOUR ANSWER TO THE QUESTION ON THE CARD. WHEN YOU ARE FINISHED THE PHOTOS WILL BE DEVELOPED AND BROUGHT BACK TO YOU.



## 3. DISCUSS

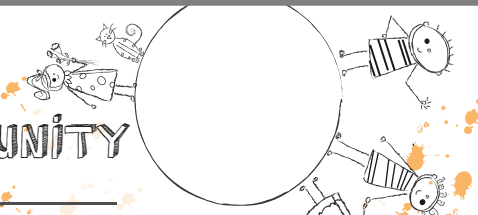
IT IS THE TIME FOR THE BOARD GAME. GO TO THE START. BY THROWING THE DICE MOVE FROM ONE FIELD TO THE OTHER. WHEN YOU REACH A CERTAIN FIELD REVEAL THE PHOTOS TAKEN ON THAT THEME. EXPLAIN HOW YOUR PHOTOS DOCUMENT THE SUSTAINABILITY ISSUES. NOW PASTE THE PHOTOS AND THE COMMENTS ON A PROVIDED SCHOOL PLAN. WHEN YOU ARE FINISHED THE NEXT TEAM IS READY TO THROW THE DICES.

## 4. DETECT

THE GAME LASTS UNTIL ALL THE "SUSPECTED" CARDS ARE REVEALED. AT THE END OF THE GAME ALL "SUSPECTED" TOPICS WILL BE DETECTED AND MAPPED ON THE SCHOOL PLAN. **CONGRATULATIONS!!!**  
YOU INSPECTED HOW SUSTIANABLE IS YOUR SCHOOL.



## COMMUNITY



**THINK ABOUT:**



- Do you feel your school belongs to the neighbourhood in which it is?
- How is your school connected to the neighbourhood (are there any activities, programs where you and your neighbours can participate)?
- Is there a place in your school where you can come with your parents, family members or neighbours?

**ANSWER AND PHOTOGRAPH**


- Take a photo of a place where you like to talk, play and socialize with your friends.
- Take a photo of a place where you like to talk and socialize with your teachers.
- Take a photo of a place where you can bring your family, friends and neighbours.

**THINK ABOUT:**

- Where do you usually in school meet your friends and talk to them?
- Where do you usually in school meet your teachers and talk to them?

## INCLUSION & EQUITY



**THINK ABOUT:**



- Are everyone in your school treated with dignity and respect?
- Are there any cliques or groups in school?
- Do you play and socialize with all the pupils and are there any pupils that are left out?
- Do you use and navigate through your school with ease?

**ANSWER AND PHOTOGRAPH**


- Photograph places in your school that you think are very accessible for everyone.
- Photograph places in your school that you think are not accessible for everyone.

**THINK ABOUT:**

- Is way finding easy and are all the pathways clear?
- Are all spaces accessible for wheelchair users?

## PARTICIPATION



**THINK ABOUT:**


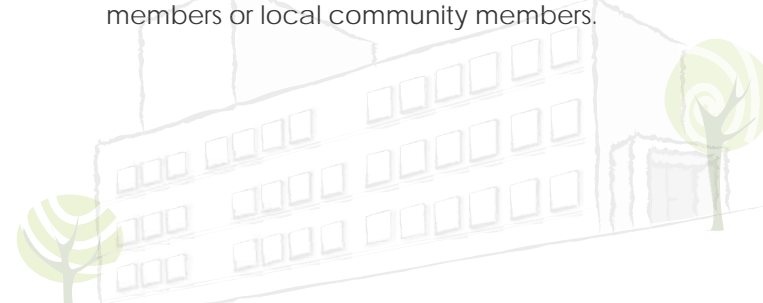
- Do you think that your opinion is appreciated and that your concerns are listened to?
- How do you communicate your opinion, ideas, wishes, etc.?
- Are there any special meeting places for you, your class mates and your teachers where you can talk individually and in groups?

**ANSWER AND PHOTOGRAPH**

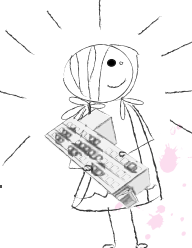
- Take a photo of a place where you talk and discuss things important to you with your class mates.
- Take a photo of a place where you talk and discuss things important to you with your teachers and head teachers.
- Take a photo of a place where you talk and discuss things important to you with your parents, family members or local community members.

**THINK ABOUT:**

- Are there any special places where your parents, family members and local community members can come and discuss things important to them?

## SENSE OF A PLACE



**THINK ABOUT:**


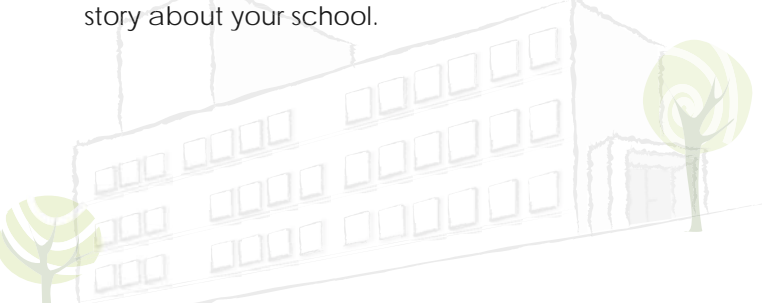
- What makes your school special and different from any other school (is there a special story, slogan, etc.)?
- What is the atmosphere in your school? Do you think that your school is inspiring, uplifting and exciting, pleasurable and enjoyable?
- Do you feel happy and welcomed in your school?

**ANSWER AND PHOTOGRAPH**

- Take a photo of a place in school that inspires you.
- Take a photo of a place that makes you feel pleasurable, enjoyable, happy, proud or welcomed.
- Take a photo of a place in school that you like the most and that you call your own.
- Take a photo of a place that captures that special story about your school.

**THINK ABOUT:**

- Is there a place in the school that you call your own?
- Do you like the way it looks like, its shape, colour, decoration, etc.?
- Do you feel proud of your school?

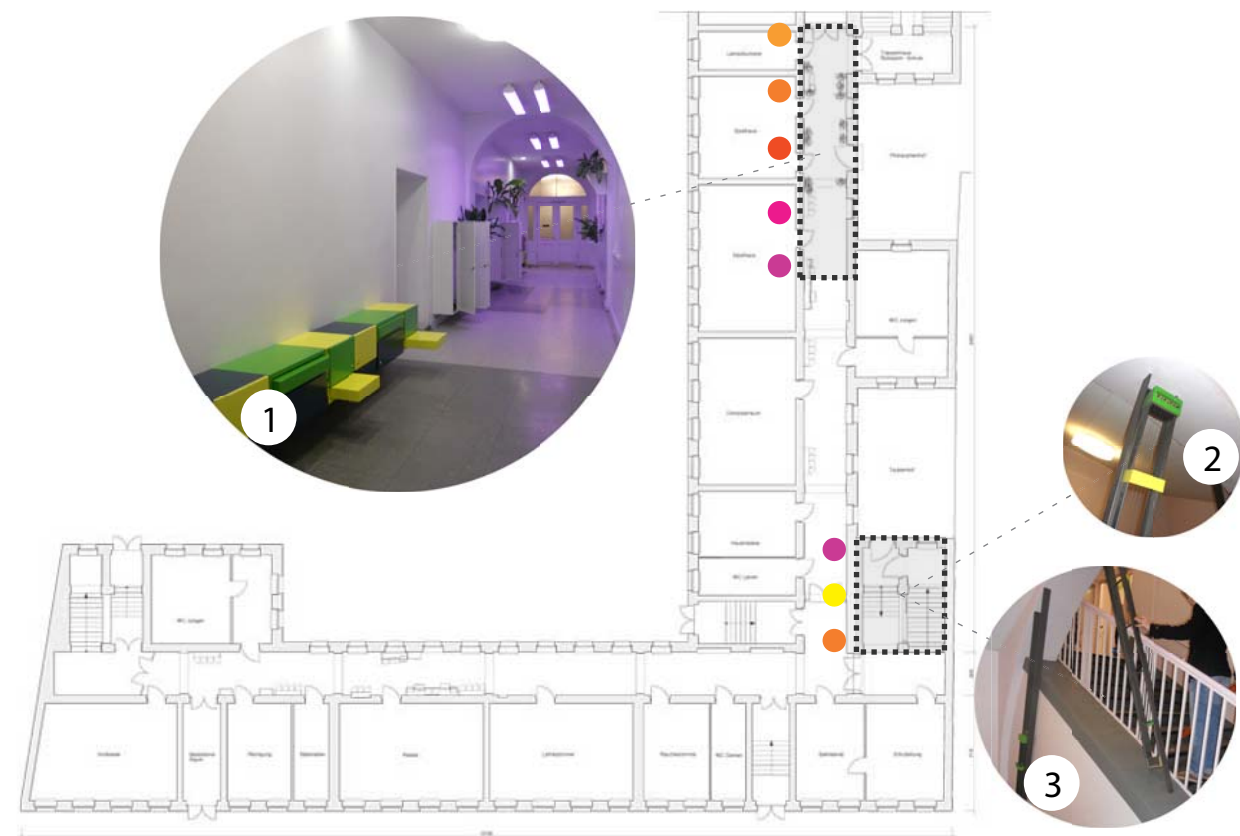





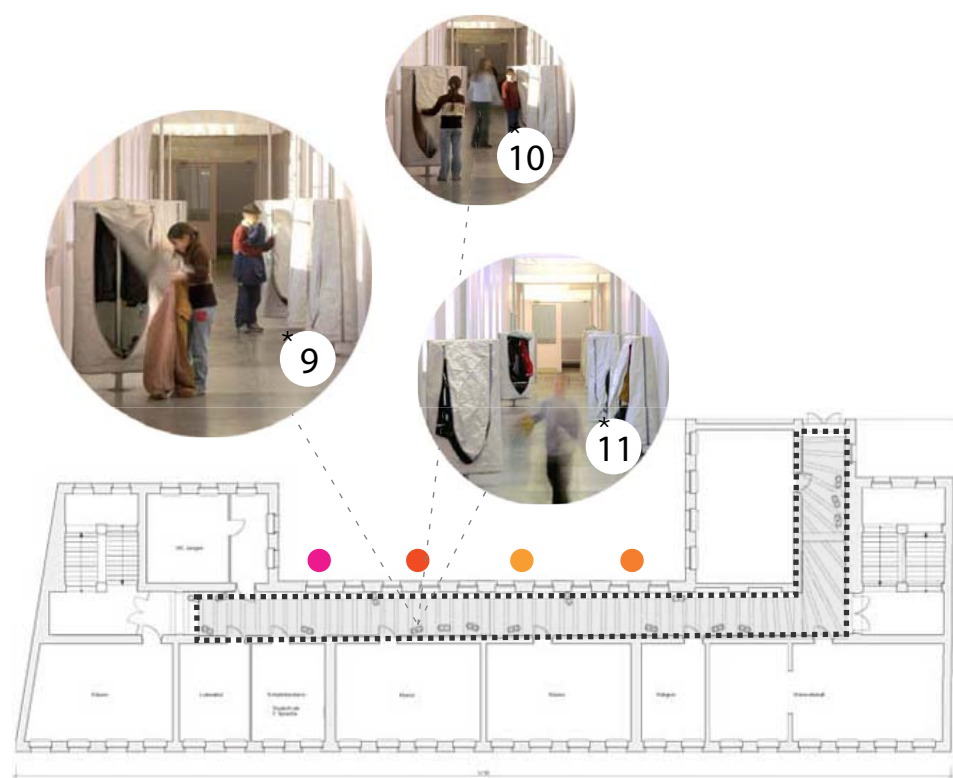
# M:EM SUSTAINABILITY HotSpots

Primary school "Erika Mann", Berlin, Germany

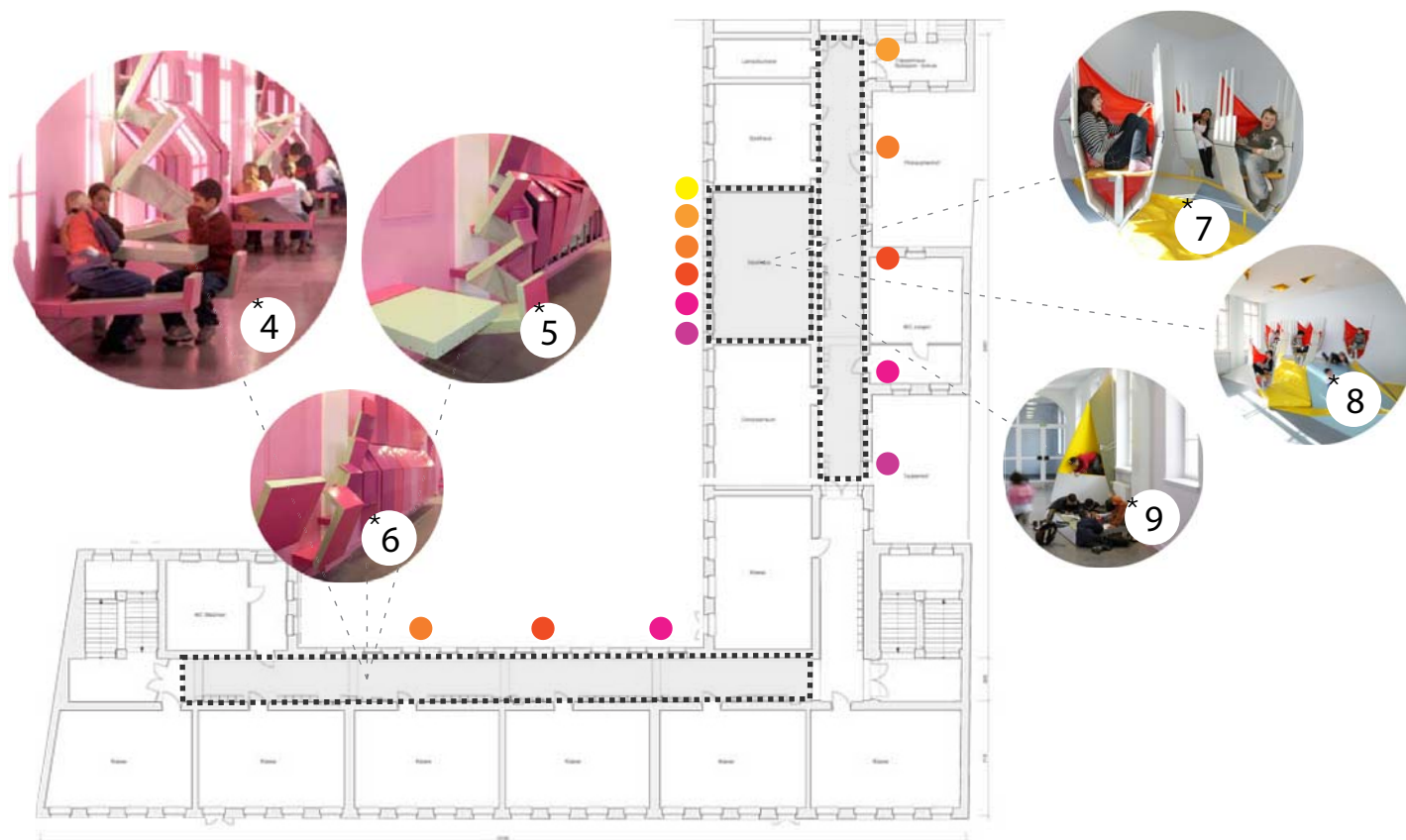
- physical activity
- participation
- sense of community
- inclusion and equity
- cultural diversity
- sense of place
- education



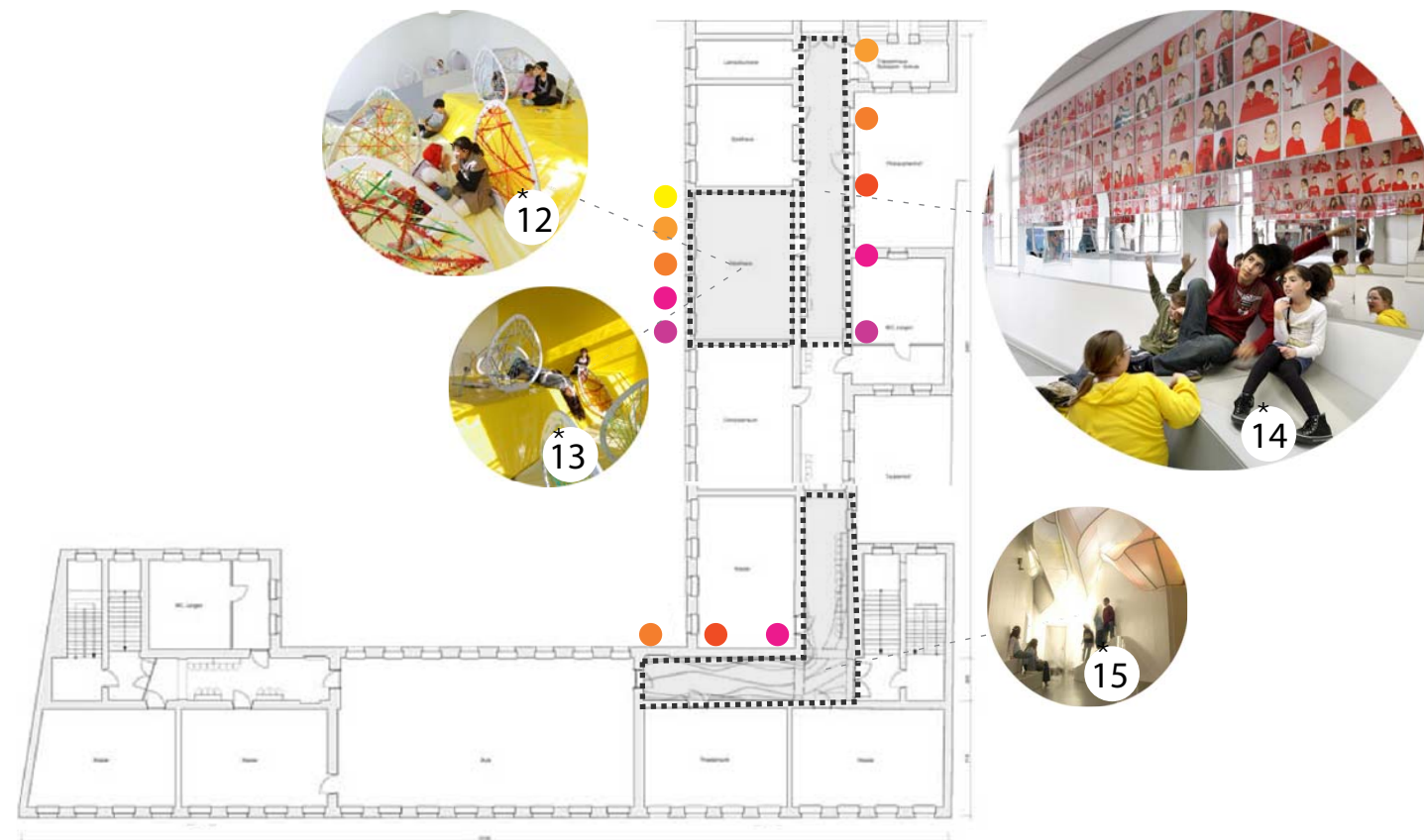
0.0 ground floor



1.0 first floor



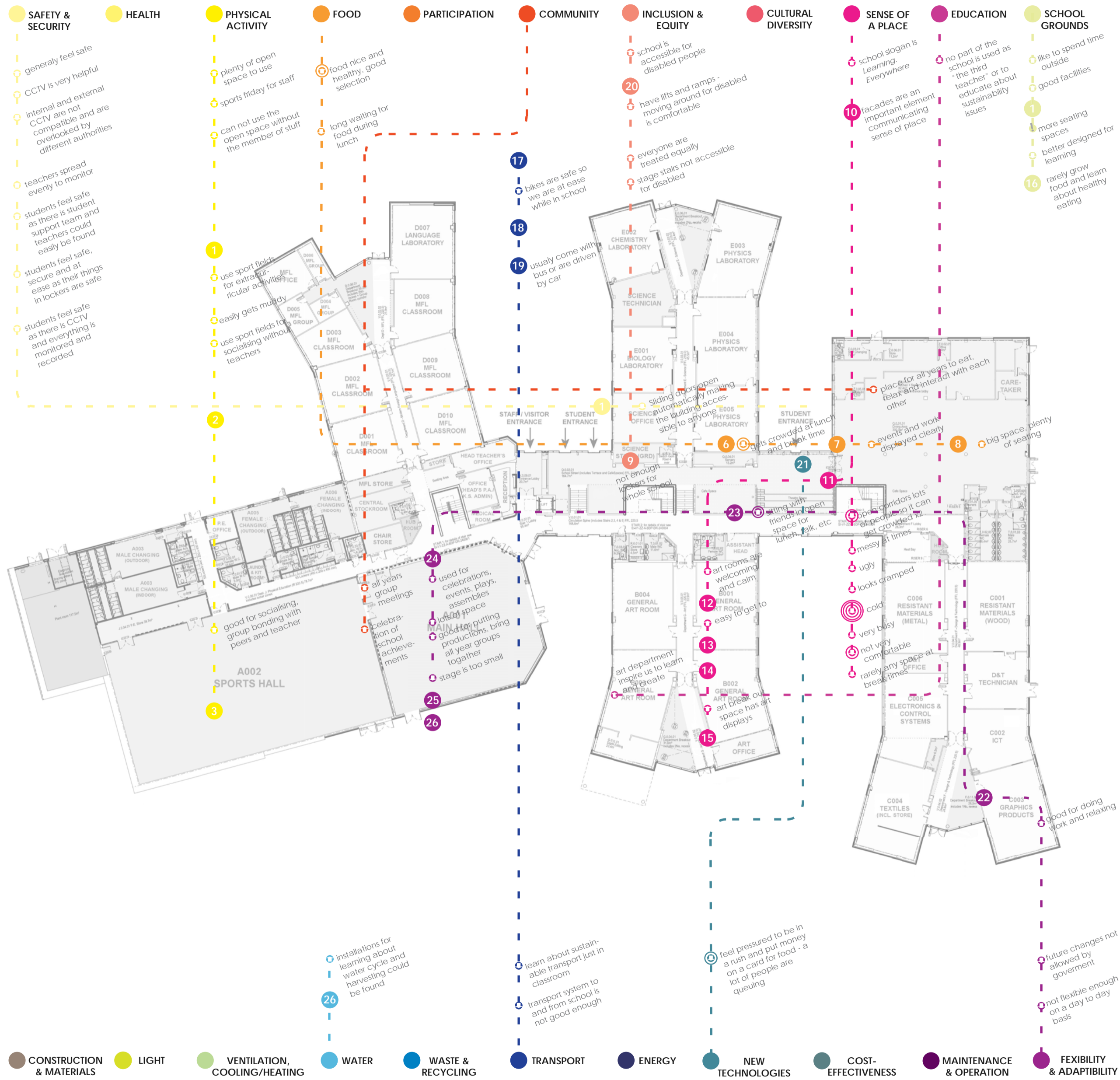
2.0 second floor



3.0 third floor

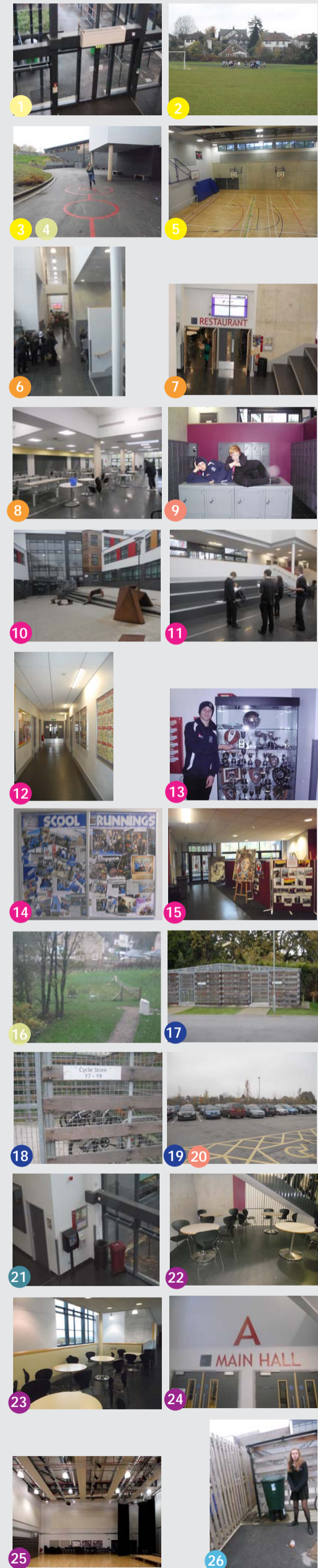
# M:SD 0.0 SUSTAINABILITY HotSpots

Secondary school "Silverdale", Sheffield, United Kingdom



Map of Sustainability Issues Identified by Teachers and Pupils - ground floor

- sustainability theme
- positive comment
- ⊖ negative comment
- ideas for improvement
- ⊖ the number of circles is equal to the number of comments made by different pupil or teacher

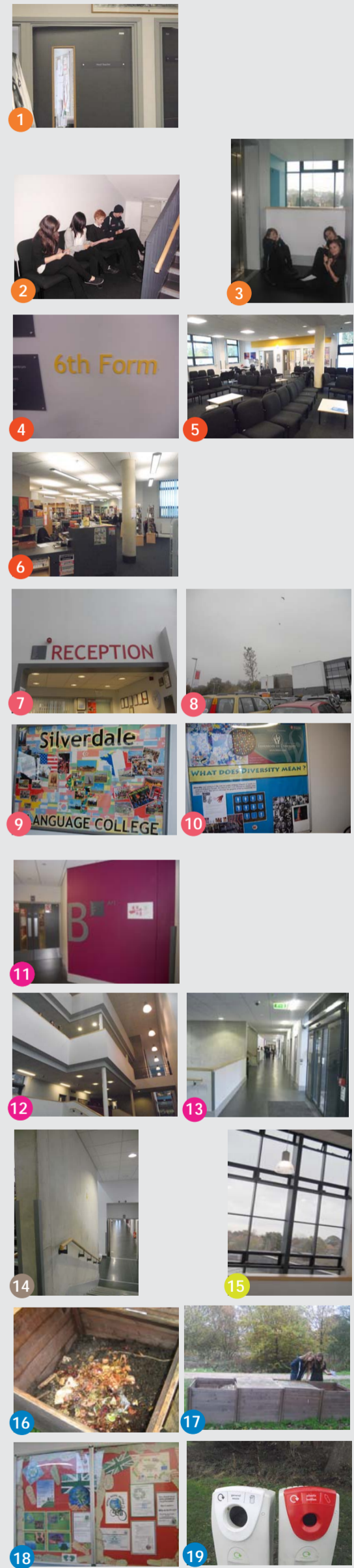
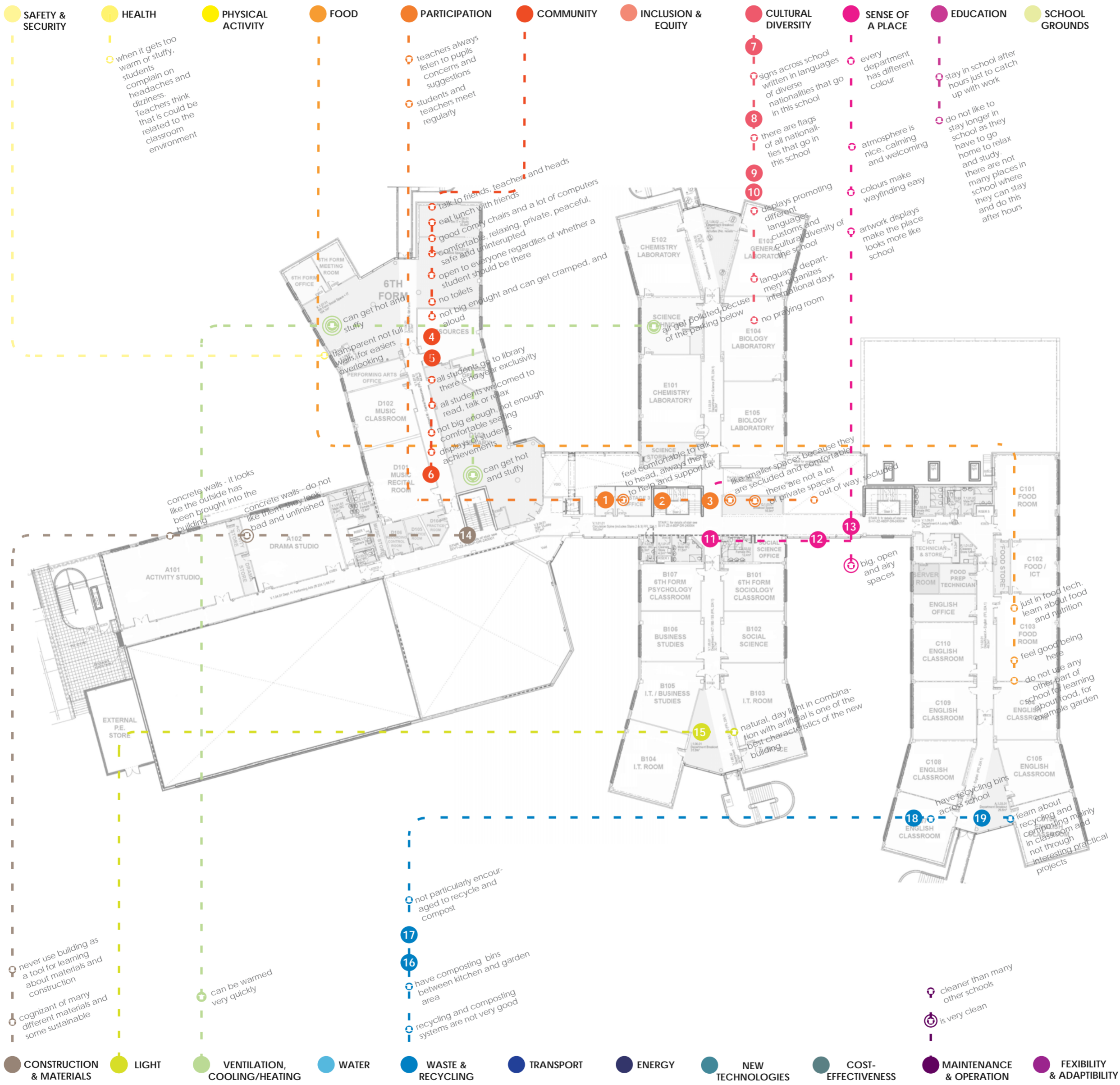


\* all used photos are made by students



# M:SD 1.0 SUSTAINABILITY HotSpots

Secondary school "Silverdale", Sheffield, United Kingdom



\* photos used were made by students

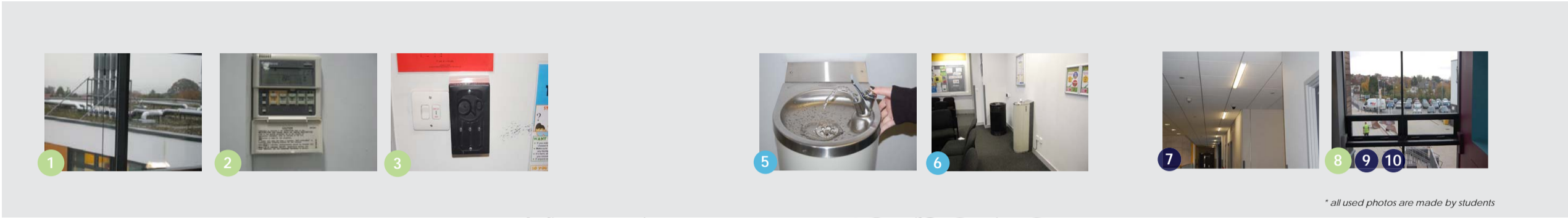
Map of Sustainability Issues Identified by Teachers and Pupils first floor

- sustainability theme
- positive comment
- negative comment
- ideas for improvement
- the number of circles is equal to the number of comments made by different pupil or teacher

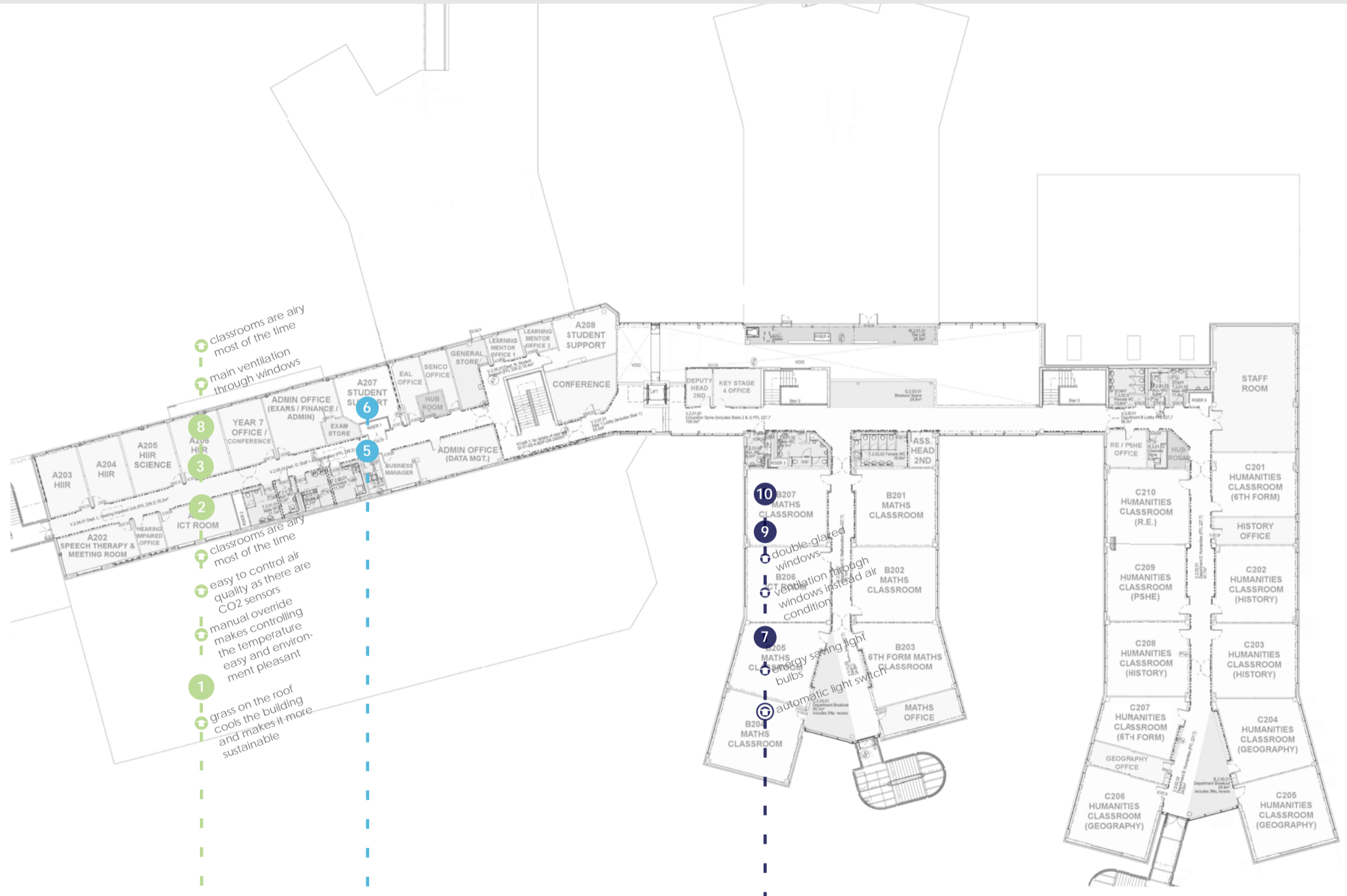
# M:SD 2.0 SUSTAINABILITY HotSpots

Secondary school "Silverdale", Sheffield, United Kingdom

- SAFETY & SECURITY
- HEALTH
- PHYSICAL ACTIVITY
- FOOD
- PARTICIPATION
- COMMUNITY
- INCLUSION & EQUITY
- CULTURAL DIVERSITY
- SENSE OF A PLACE
- EDUCATION
- SCHOOL GROUNDS



\* all used photos are made by students



classrooms are airy most of the time  
 main ventilation through windows  
 classrooms are airy most of the time  
 easy to control air quality as there are CO2 sensors  
 manual override makes controlling the temperature easy and environment pleasant  
 grass on the roof cools the building and makes it more sustainable

double-glazed windows  
 ventilation through windows instead air condition  
 energy saving light bulbs  
 automatic light switch

big and open spaces get cold (sports hall, main hall, stage near the restaurant)  
 ventilation works well  
 enough fresh water taps around the school  
 not aware of any water saving strategies

are not cognizant of any special energy saving strategies

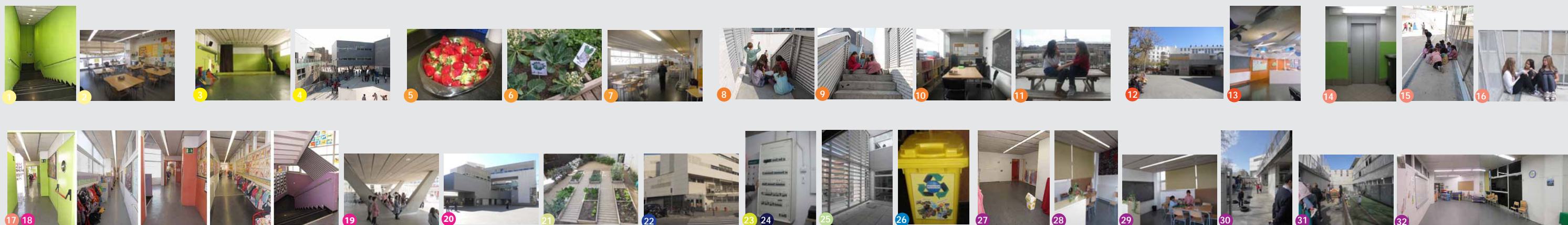
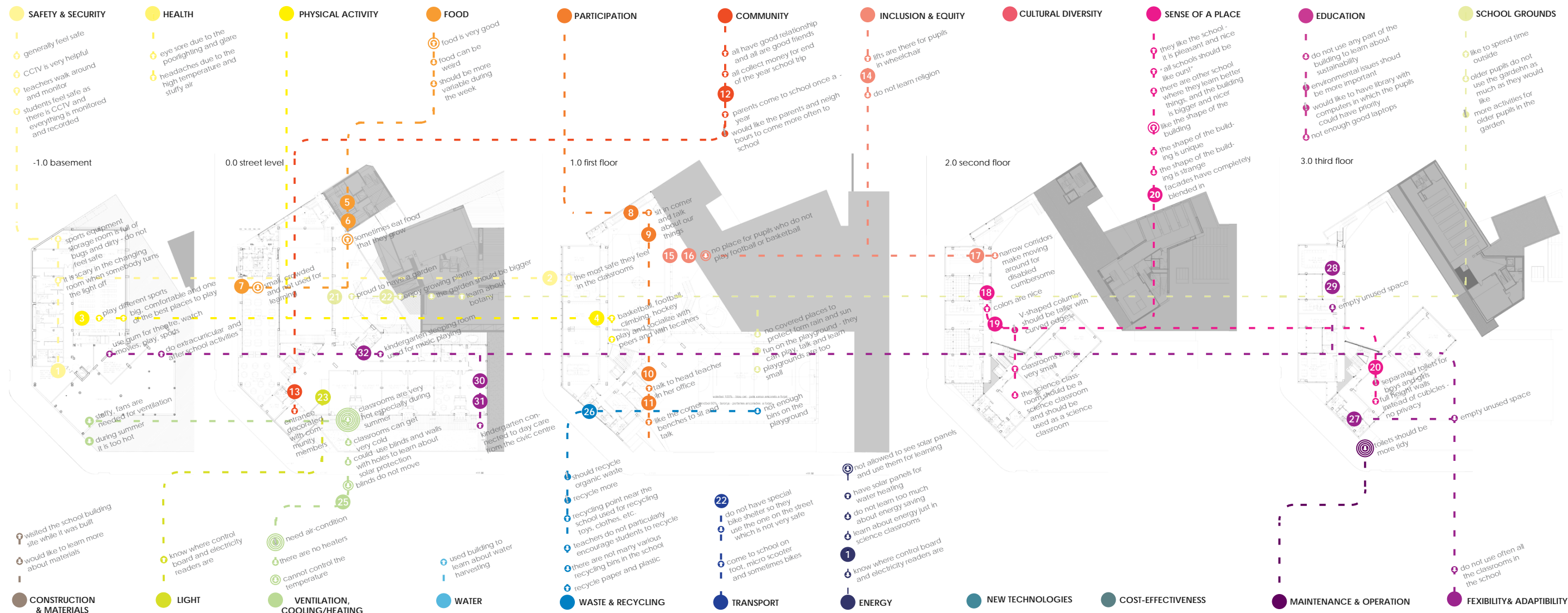
- CONSTRUCTION & MATERIALS
- LIGHT
- VENTILATION, COOLING/HEATING
- WATER
- WASTE & RECYCLING
- TRANSPORT
- ENERGY
- NEW TECHNOLOGIES
- COST-EFFECTIVENESS
- MAINTENANCE & OPERATION
- FLEXIBILITY & ADAPTABILITY

Map of Sustainability Issues Identified by Teachers and Pupils second floor

- sustainability theme
- positive comment
- negative comment
- ideas for improvement
- ◎ the number of circles is equal to the number of comments made by different pupil or teacher

# M:FP SUSTAINABILITY HotSpots

Primary school "Fort Pienc", Barcelona, Spain



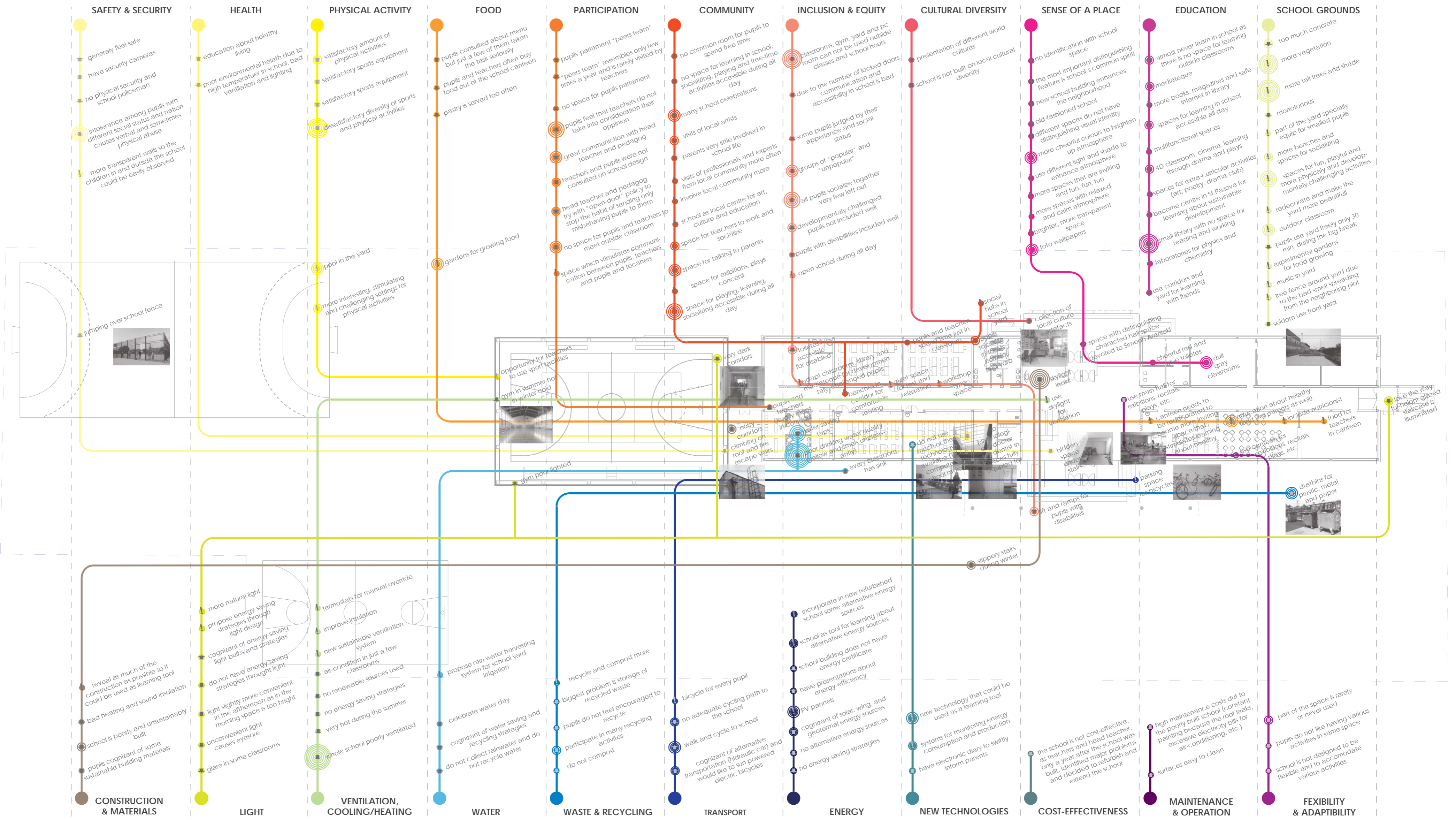
\* all used photos are made by students

## Map of Sustainability Issues Identified by Teachers and Pupils

- sustainability theme
- ideas for improvement
- positive comment
- negative comment
- the number of circles is equal to the number of comments made by different pupil or teacher

# SUSTAINABILITY HotSpots

Primary school "Simeon Aranicki", Stara Pazova, Serbia



Map of Sustainability Issues Identified by Teachers and Pupils

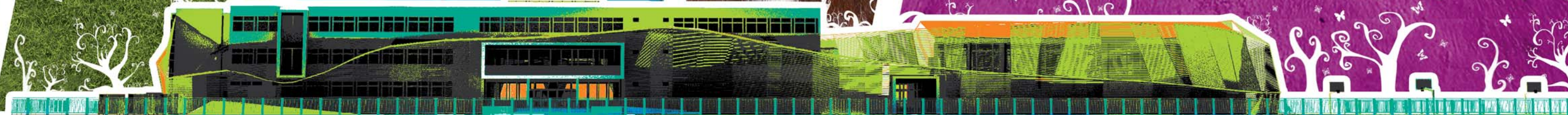
- sustainability theme
- positive comment
- ⊖ negative comment
- ⊙ place specific comment
- ⊚ general comment
- ⊘ number of circles is equal to the number of comments made by different pupil or teacher

# SIMLEON ARANICK

design ideas for transforming

the school into

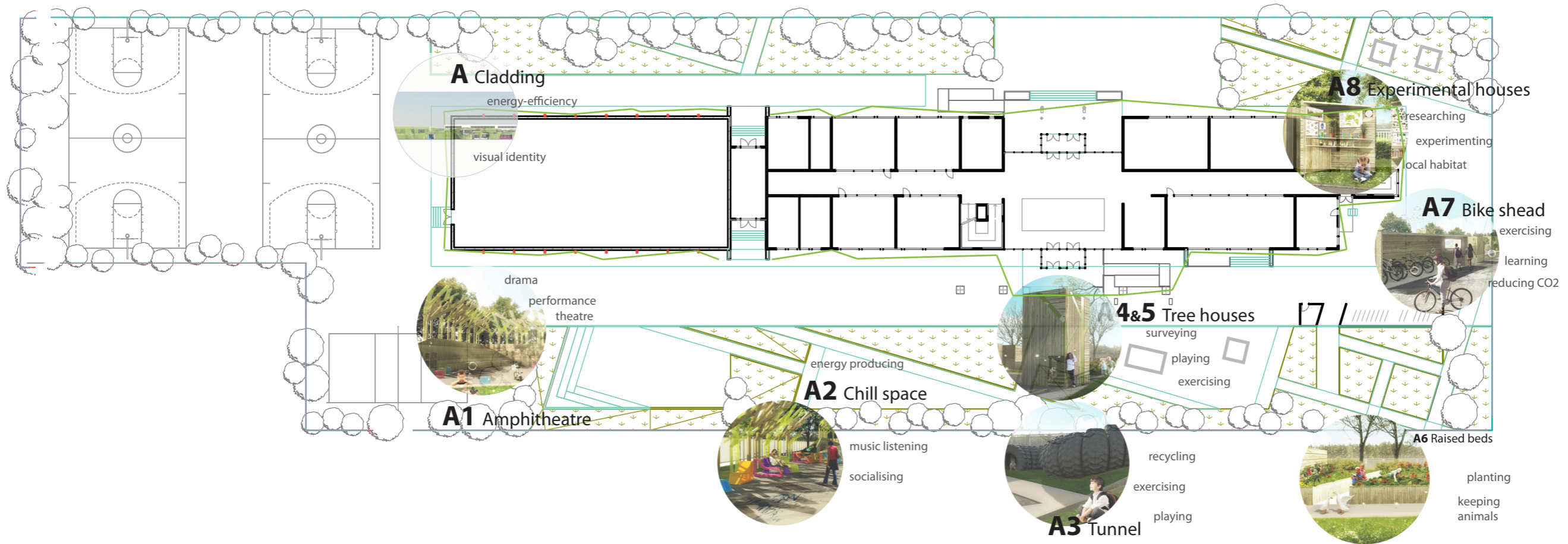
a more sustainable and pedagogically valuable



# Map of design ideas

Primary school "Simeon Aranicki", Stara Pazova, Serbia

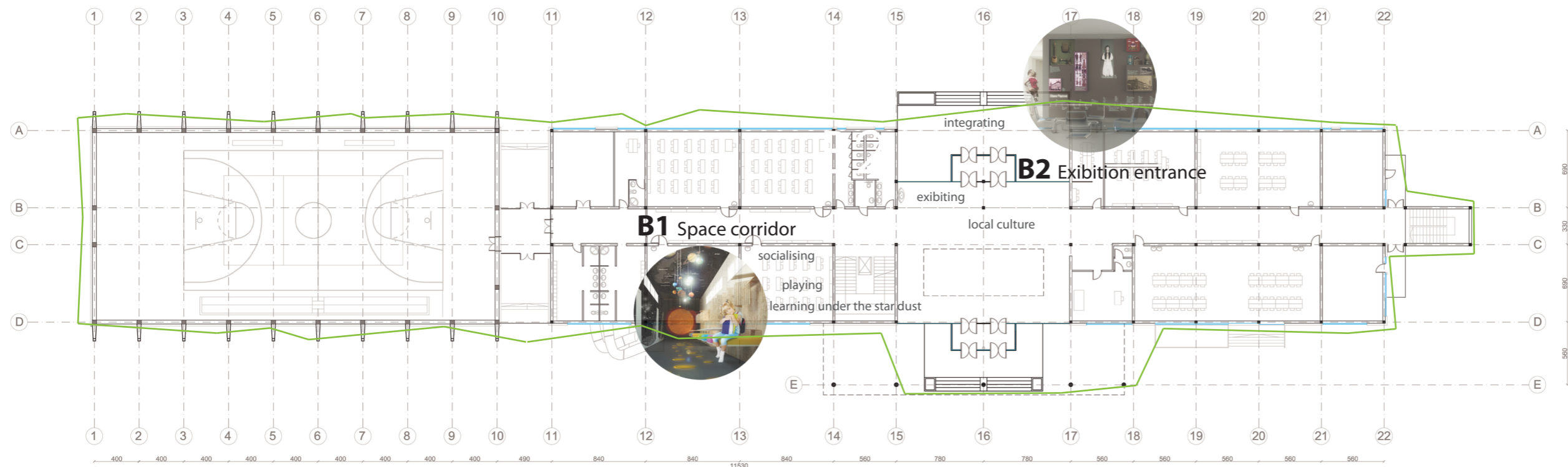
## A School yard -0.75



Suggested ideas

- A** Cladding
- A1** Amphitheatre
- A2** Chill space
- A3** Tunnel
- A4&5** Tree houses
- A6** Raised beds
- A7** Bike shed
- A8** Experimental houses

## B Ground floor +/- 0.00



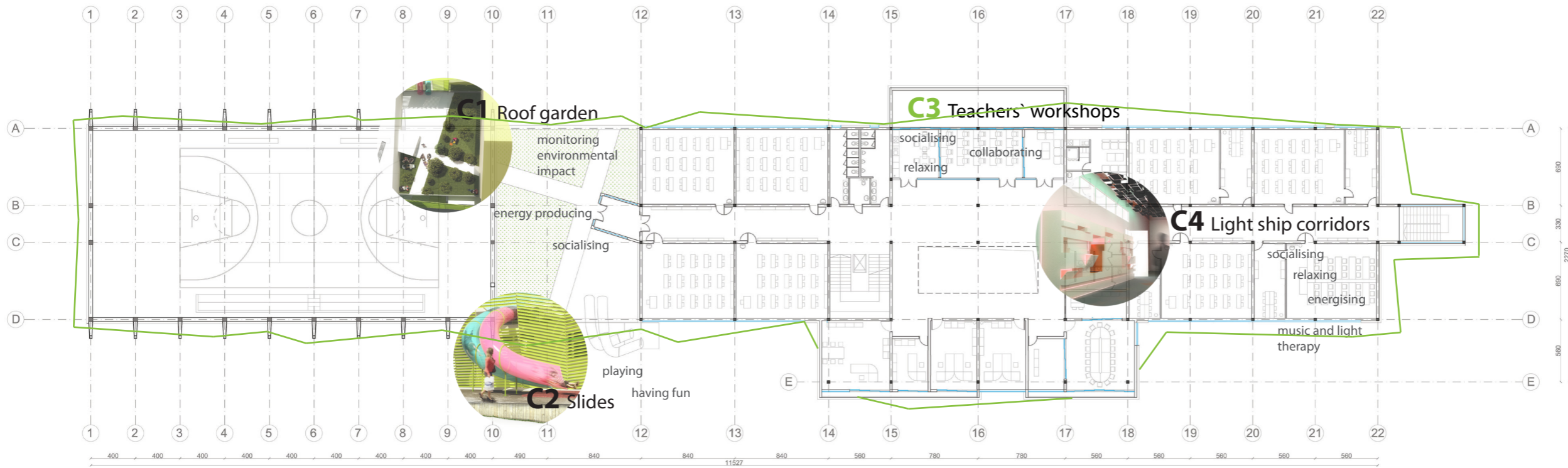
Suggested ideas

- B1** Space corridor
- B2** Exhibition entrance

# Map of design ideas

Primary school "Simeon Aranicki", Stara Pazova, Serbia

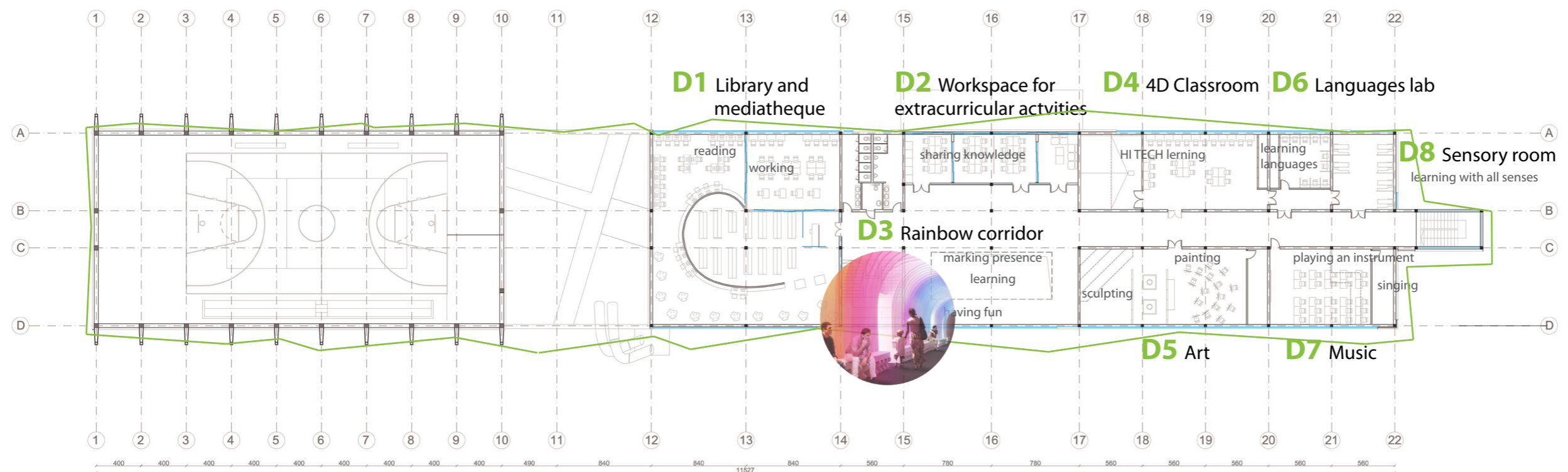
## C First floor + 3.60



Suggested ideas

- C1** Roof garden
- C2** Slides
- C3** Teachers' workshops
- C4** Light ship corridors

## D Added second floor + 7.20



Suggested ideas for the new floor:

- D1** Library and mediathèque
- D2** Workspace for extracurricular activities
- D3** Rainbow corridor
- D4** 4D Classroom
- D5** Art
- D6** Languages Lab
- D7** Music
- D8** Sensory room

Key

**A1** Photo collaged Ideas

**A1** Ideas suggested only in 2D drawings

# A Cladding

## Researching the issues

**National Educational goals**  
 -awareness about the importance of sustainable development, protection and preservation of nature and the environment, ecological ethics

**Local Sustainable Development Strategy**  
 -improving the degree of thermal isolation of residential and commercial properties  
 -improving the energy-efficiency for 15% till 2020  
 -development of stimulating mechanisms for energy-efficacy of residential and commercial properties  
 -education about ecological challenges

**MICRO location challenges**



lack of proper protection for large glass surfaces

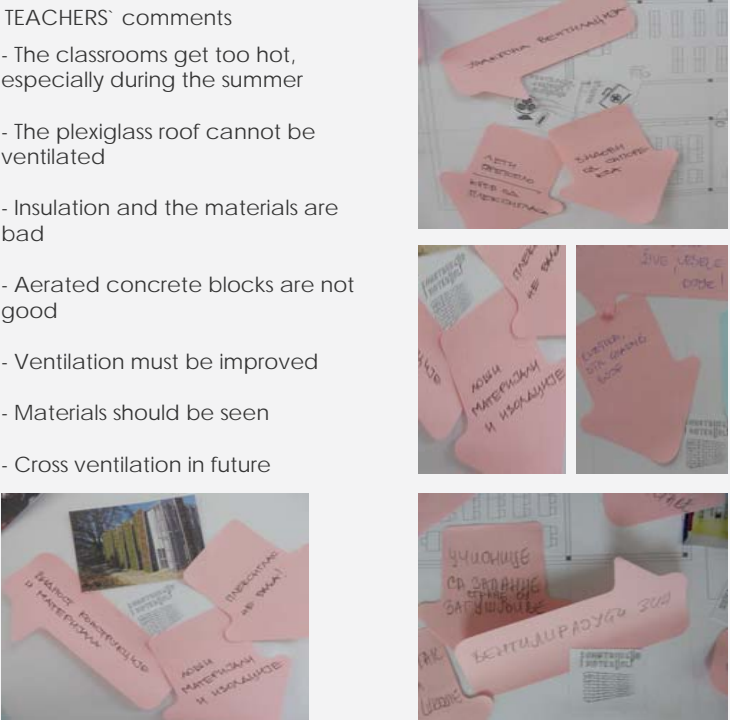


spaces too bright, hot and stuffy

- SAFETY & SECURITY
- HEALTH
- PHYSICAL ACTIVITY
- FOOD
- SENSE OF COMMUNITY
- PARTICIPATION
- INCLUSION & EQUITY
- CULTURAL DIVERSITY
- SENSE OF A PLACE
- EDUCATION
- SCHOOL GROUNDS
- CONSTRUCTION & MATERIALS
- LIGHT
- VENTILATION, COOLING & HEATING
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- WASTE & RECYCLING
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- COST-EFFECTIVENESS
- MAINTENANCE & OPERATION
- FLEXIBILITY & ADAPTABILITY

**TEACHERS' comments**



- The classrooms get too hot, especially during the summer
- The plexiglass roof cannot be ventilated
- Insulation and the materials are bad
- Aerated concrete blocks are not good
- Ventilation must be improved
- Materials should be seen
- Cross ventilation in future



**PUPILS' comments**

- It is very hot in the school, especially during the summer
- It is hot as there are no trees around our school
- The blinds are not good, the school is new and they are already broken
- The light in classrooms overlooking the yard (west facade) is too bright, we have eye sore
- The school looks boring, people seeing it do not know that we are one cheerful community
- Seeing the school the neighbours should realise that we are a green school

**Model no.1 Green wave Dynamic learning**



# A Cladding

Developing the ideas

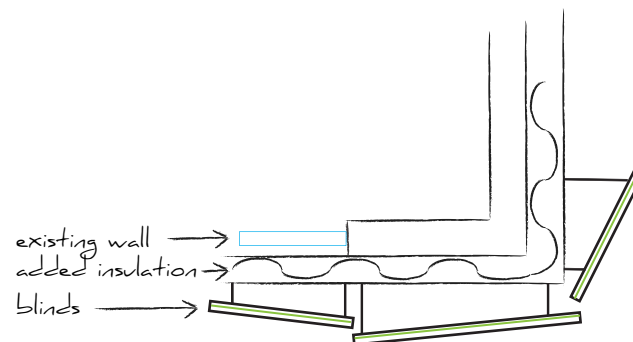
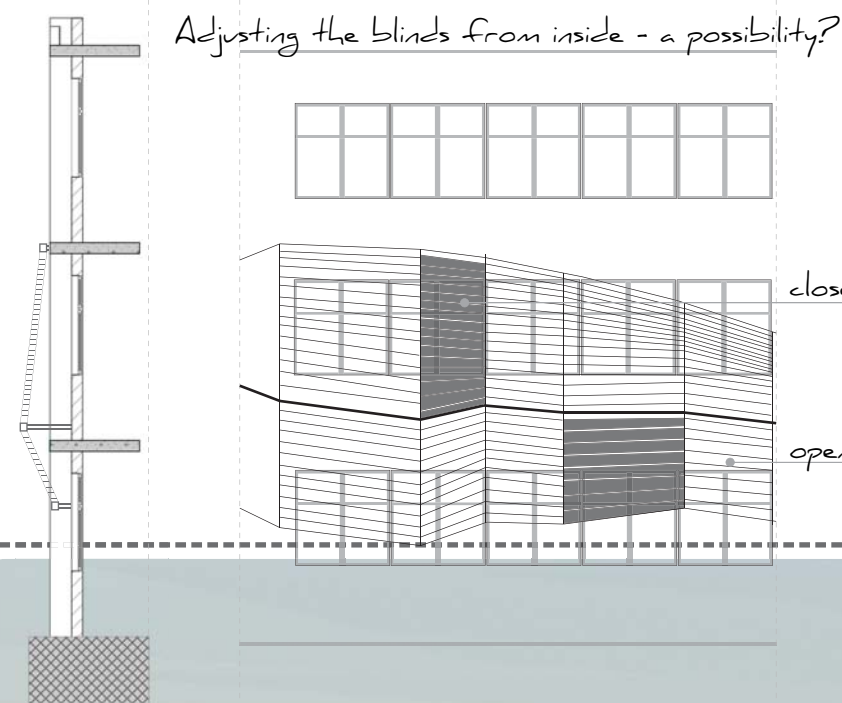
*You've been bitten by the green bug!*  
- Ivan, Tijana, Milos, age 13

How should the facades be remodeled so that the energy-efficiency of the school building is improved and the aesthetic appeal changed?



### Pedagogical impact of space - Key messages from the analysis:

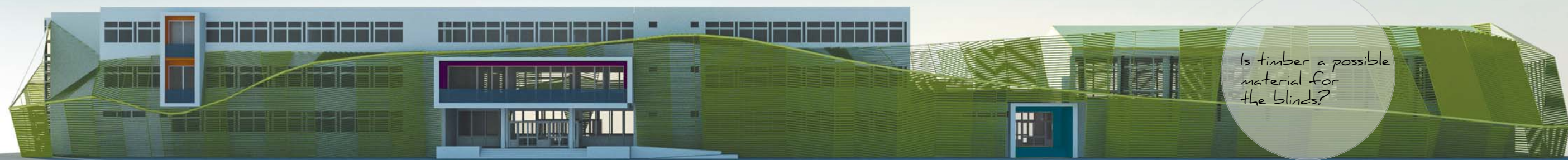
- The design of the facades was described as an important element communicating sense of a place.
- The design features must be skilful interpretations of ideas, wishes and beliefs of school members, in order to contribute to sense of a place.
- The ability of very large glass surfaces to provide copious amounts of daylight, and create a pleasant working atmosphere must be balanced with their contribution to heat gains/losses.
- Design overlooks negatively impact learning and working and translate into an extra spending so that the life and work in the school could be more pleasant.
- Poor environmental conditions were related by teachers to some health problems.
- The opportunity to control the environment and all accompanying systems enables the occupants to create pleasant working and learning atmosphere.
- Pupils easily pick up information from their school environment.



Can newly cladded facade contribute to new identity of the school, as well as the neighbourhood?



Will this type of cladding allow enough shade from the sun in the summer, and enough protection from the wind during the winter?



Is timber a possible material for the blinds?

# A1 Amphitheatre

## Researching the issues

**National Educational goals**

- equality and accessibility of education without discrimination and segregation
- different types of cooperation with the local community and the broader social environment
- develop creative abilities, foster creativeness
- develop communication and dialogue skills, the sense of solidarity, quality and efficient cooperation with others, fostering friendship and camaraderie
- to acquire quality knowledge and skills, values, and artistic, cultural literacy

**Local Sustainable Development Strategy**

- low forest coverage, creating new forest coverage areas and green areas
- affirmation and development of cultural facilities
- raising awareness about the needs of the young, marginalised and physically impaired
- raising the technical and organisational capacity of schools
- development of new educational concepts

- SAFETY & SECURITY
- HEALTH
- PHYSICAL ACTIVITY
- FOOD
- SENSE OF COMMUNITY
- PARTICIPATION
- INCLUSION & EQUITY
- CULTURAL DIVERSITY
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- MAINTENANCE & OPERATION
- FLEXIBILITY & ADAPTABILITY

**MACRO location challenges**



lack of public play spaces



all public cultural amenities are in the city centre

**MICRO location challenges**



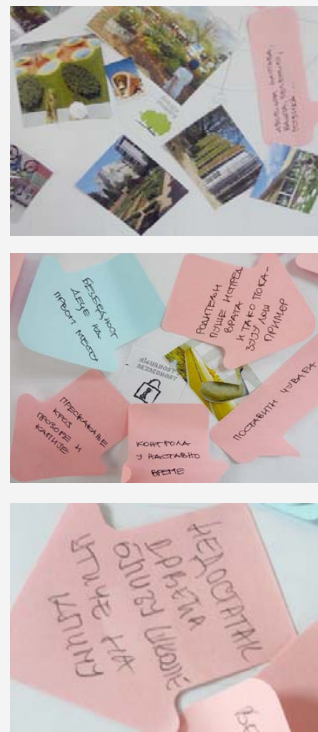
lack of equipment in the yard



lack of space for theatre and performance

**TEACHERS' comments**


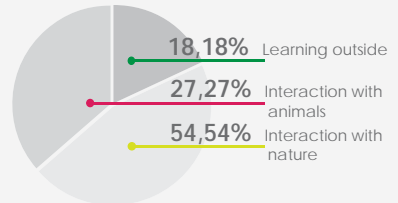

- Lack of facilities in the yard
- Lack of shade and vegetation
- Jumping and climbing over fences is a safety issues
- Safe and secure access to the school yard after school hours
- Teaching and learning must be expanded into the yard
- We need an outdoor classroom
- We need a space for drama and theatre
- Pupils in wheelchair should not be left aside



**PUPILS' comments**

- The yard is empty
- There is no shade and we cannot play when it is hot
- It must be nicer, now it is very monotonous
- We would like to use the yard after school also
- We need a space to work with the local artists and experts
- We need spaces for learning and playing after school
- We would like to have a classroom in the nature, where we could sit under the shade, learn, perform and play among the trees

**Box no.9 Classroom in the Nature**

# A1 Amphitheatre

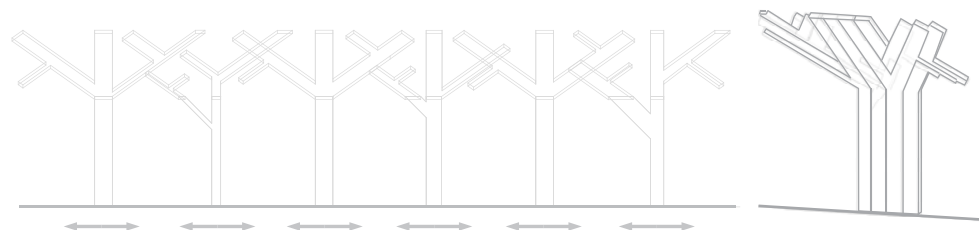
## Developing the ideas

*Under the swinging trees, we perform, dance and play, come and see us, all that we learned, we will display!*

- Anja, Bojan, Una, age 7 and 9

*How should the school yard be redesigned and equipped to become suitable platform for new forms of learning?*

Excavated ancient roman settlement with an amphitheatre - an inspirational motive!



*By moving the canopies could children create shaded/well lit spaces for reading, learning or preparing their roles for plays in groups or alone?*

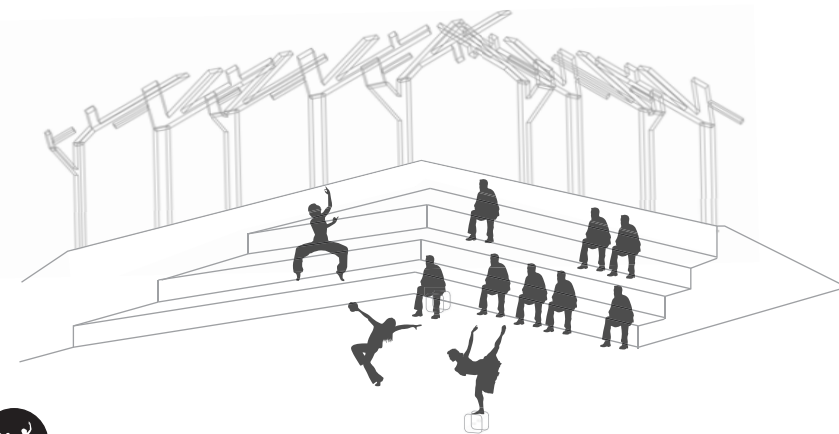
*What kind of activities could community members organise for the children in school? Could artists organise painting lessons, academics present their latest findings in a child friendly manner...?*



### Pedagogical impact of space - Key messages from the analysis:

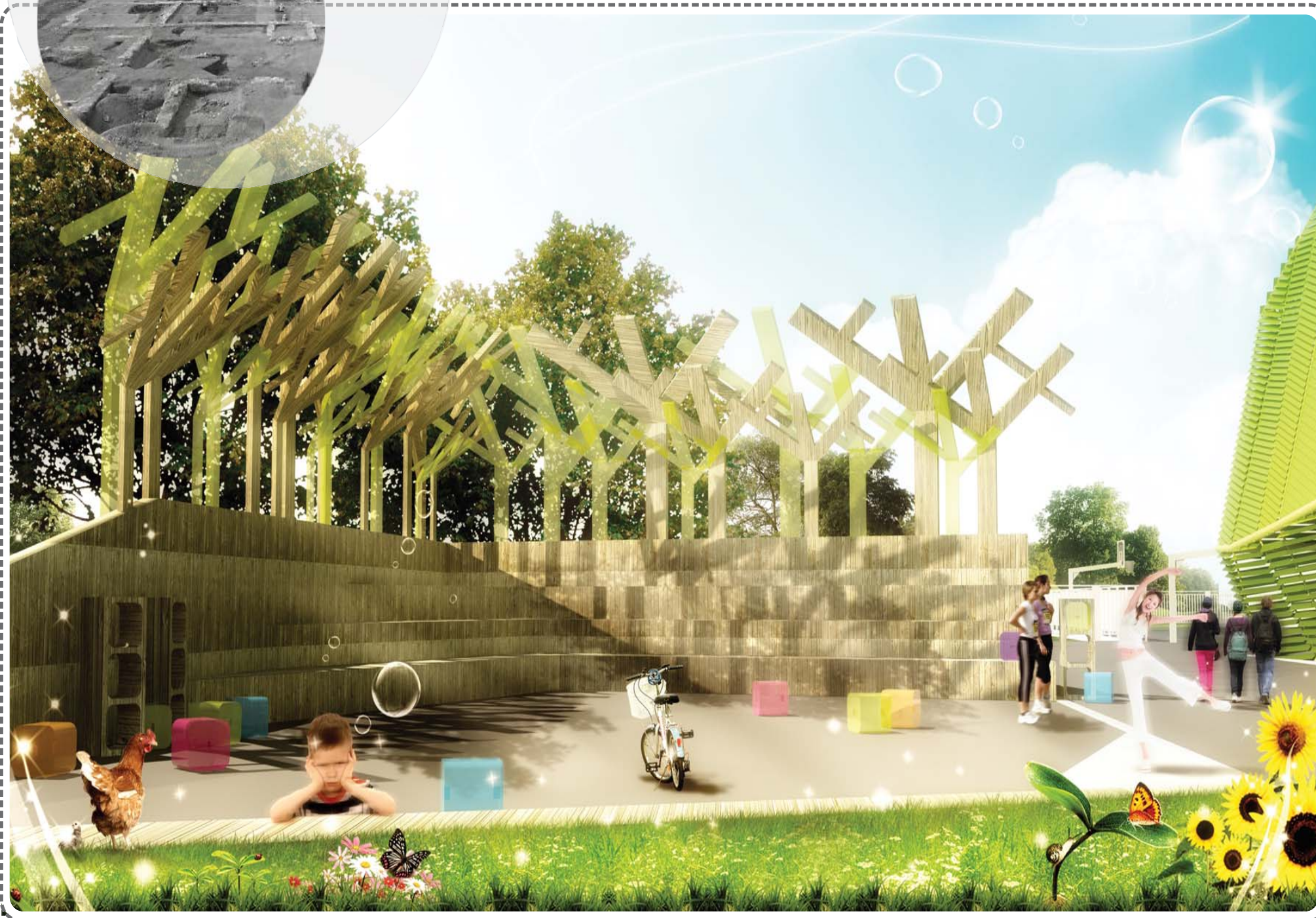
- The position of the school within the community and the joint use of the facilities by school and local neighbourhood members foster the development of sense of community.

*How could the numerous acting clubs use the amphitheatre to work with pupils, organise acting workshops, help teachers with learning through drama and play approach?*



### Pedagogical impact of space - Key messages from the analysis:

- Well structured activities around thoughtfully designed space, impact the bonding of the teachers, pupils, neighbours and knowledge exchange.



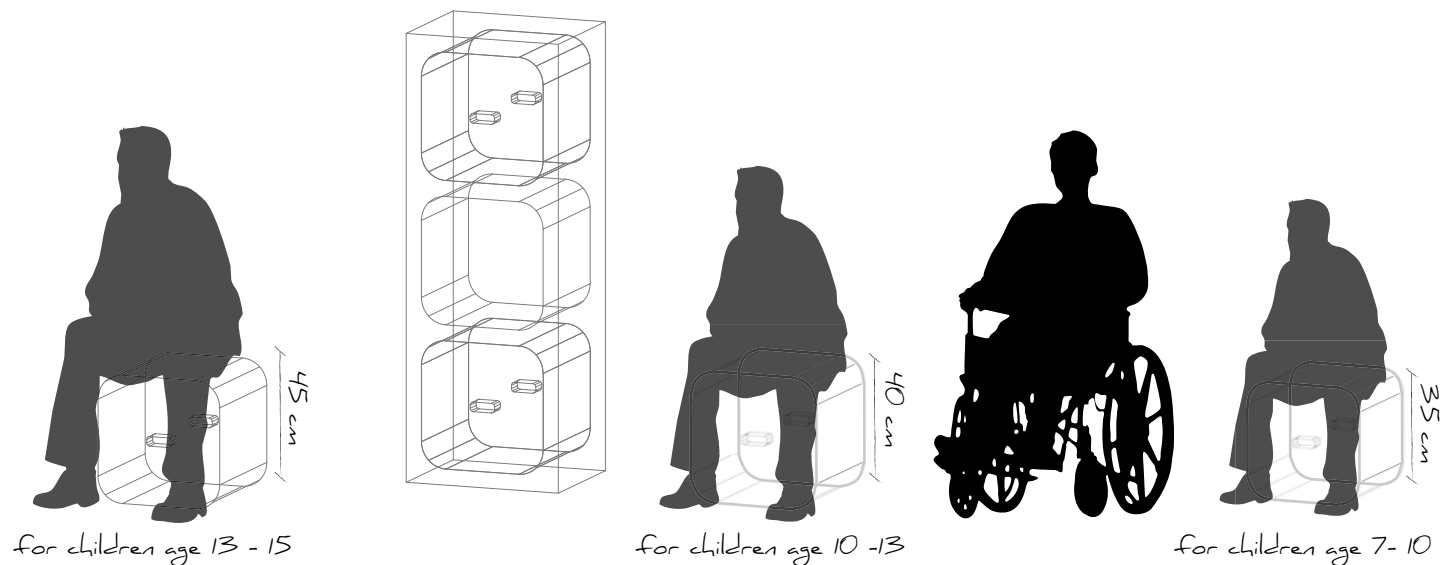
# A1 Amphitheatre

Developing the ideas

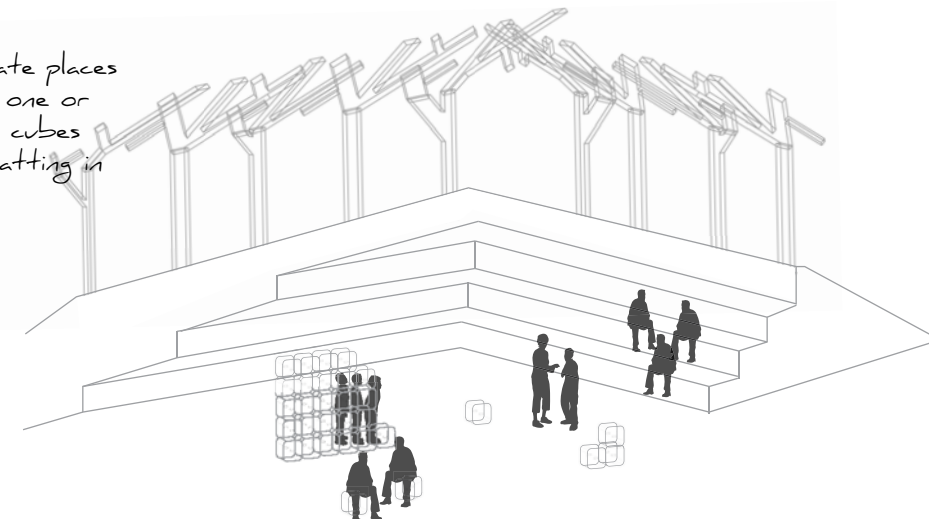
What elements should we design to transform the school yard into a more flexible and adaptable learning and socialising space?

Supporting inclusion through design

- Will the children having the seating cubes appropriate for their age feel more included?
- Will the pupils in the wheelchair feel more as a part of the group sitting surrounded by their friends, instead on the side?



Can pupils use the cubes to create places for secretly whispering with just one or two friends? Can they use the cubes to create seating spaces for chatting in large groups?

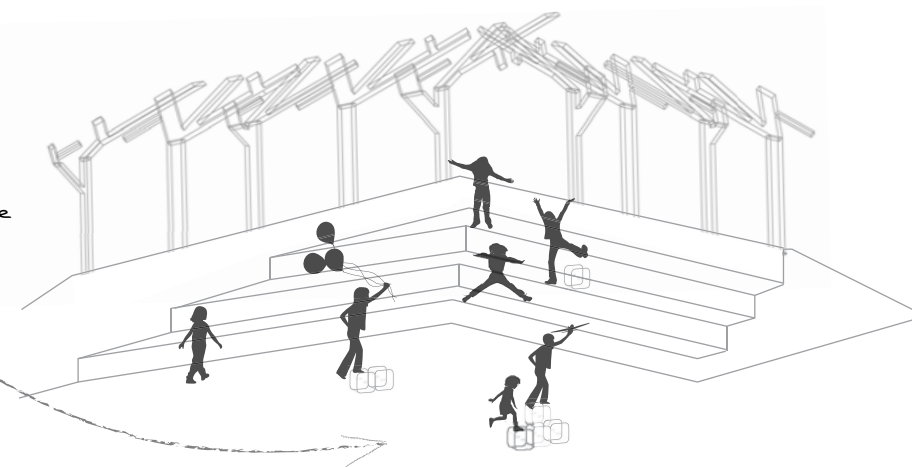


socialising

Pedagogical impact of space - Key messages from the analysis:

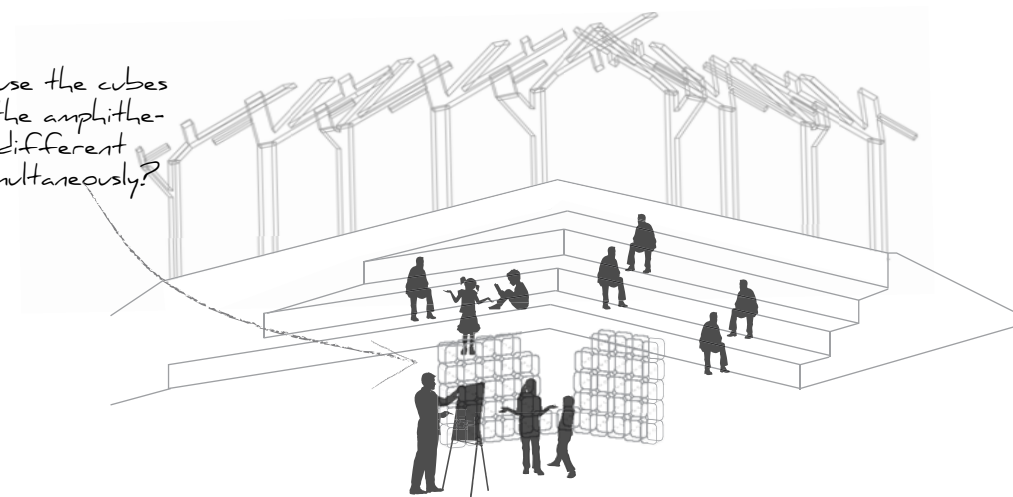
- Playgrounds are good places for bonding, building group cohesion and developing social skills.

How can pupils use the cubes and the amphitheatre for playing?



playing

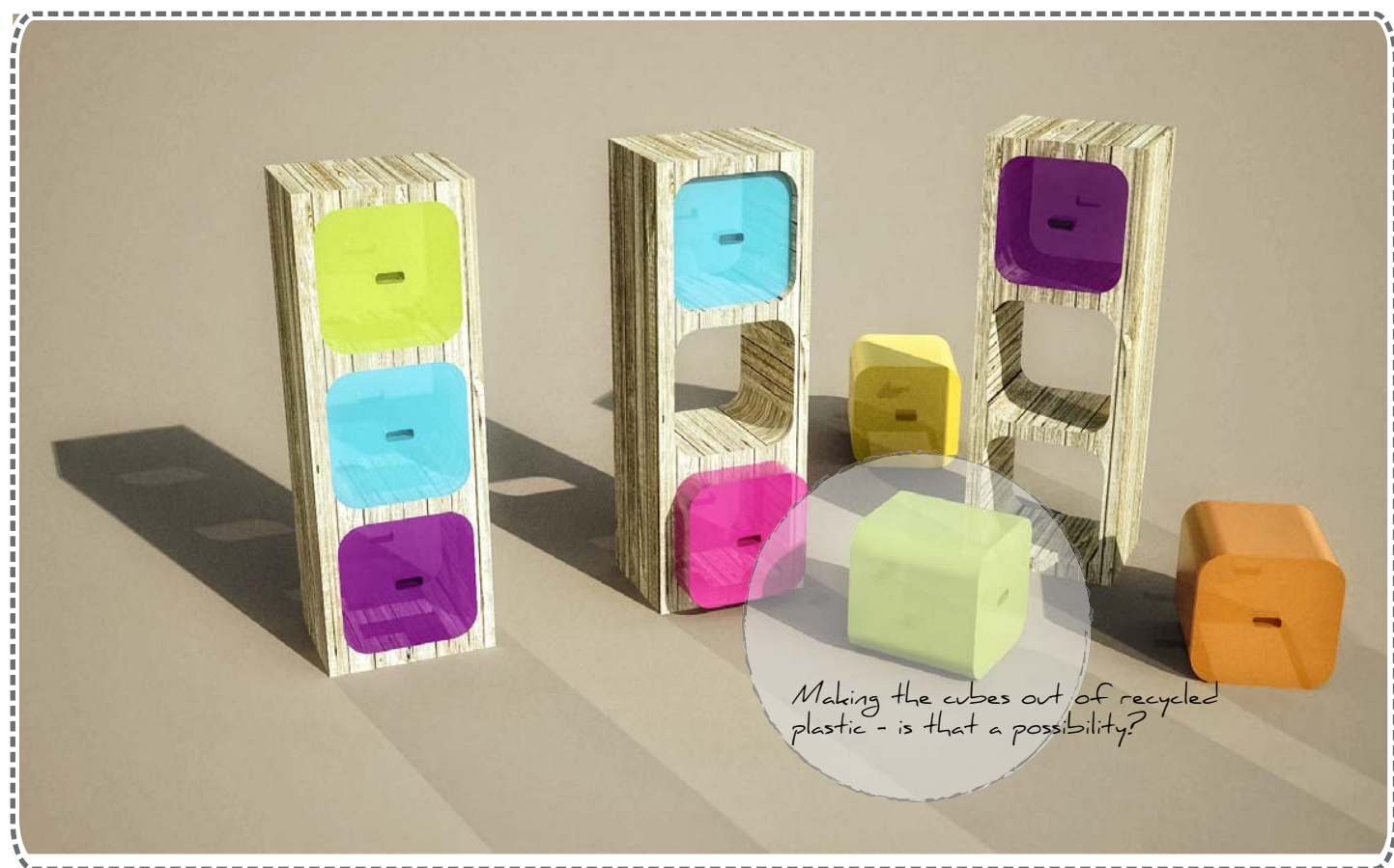
Can the pupils and teachers use the cubes to divide the space around the amphitheatre and create spaces for different activities that can happen simultaneously?



learning

Pedagogical impact of space - Key messages from the analysis:

- Playgrounds are places for learning as well.



# A2 Chill space

## Researching the issues

**National Educational goals**

- abilities to find, analyse, utilise and communicate information, while skillfully and effectively using information and communication technologies
- communication and dialogue skills, the sense of solidarity, quality and efficient cooperation with others, fostering friendship and camaraderie
- ability to become a responsible citizen, capable of living in a democratic and humane society, respect human and civil rights, develop the basic principles of personal responsibility
- awareness about the importance of sustainable development, protection and preservation of nature and the environment, ecological ethics

**Local Sustainable Development Strategy**

- education about ecological challenges
- affirmation of renewable energy sources
- support for recycling activities
- development of education programs for children and young people as a way of preventing social problems
- procurement of equipment and teaching materials for environmental education

- SAFETY& SECURITY
- HEALTH
- PHYSICAL ACTIVITY
- FOOD
- SENSE OF COMMUNITY
- PARTICIPATION
- INCLUSION & EQUITY
- CULTURAL DIVERSITY
- SENSE OF A PLACE
- EDUCATION
- SCHOOL GROUNDS
- CONSTRUCTION & MATERIALS
- LIGHT
- VENTILATION, COOLING&HEATING
- WATER
- WASTE & RECYCLING
- TRANSPORT
- ENERGY
- NEW TECHNOLOGIES
- COST-EFFECTIVENESS
- MAINTENANCE & OPERATION
- FLEXIBILITY & ADAPTIBILITY

**MACRO location challenges**



lack of public play spaces



macro and micro landfills, low awareness about recycling

**MICRO location challenges**



lack of equipment in the yard




low awareness about recycling possibilities



lack of private spaces

**TEACHERS' comments**

- More furnished and equipped spaces in the yard
- Lack of shade and vegetation
- Education about ecological issues and alternative energy sources
- Eco character supported through space design
- Spaces for stimulative play and learning
- Finding creative ways of using collected materials suitable for recycling
- Including some alternative energy sources
- Having music in the yard would be nice
- Eco materials should be transparently built in






**PUPILS' comments**

Box no.5 In synergy with the Nature

- Constant access to the school yard
- More and better equipped spaces in the yard
- Private space for themselves accessible all the time
- Lack of spaces for learning and playing during the free time
- The yard is monotonous, there is too much concrete

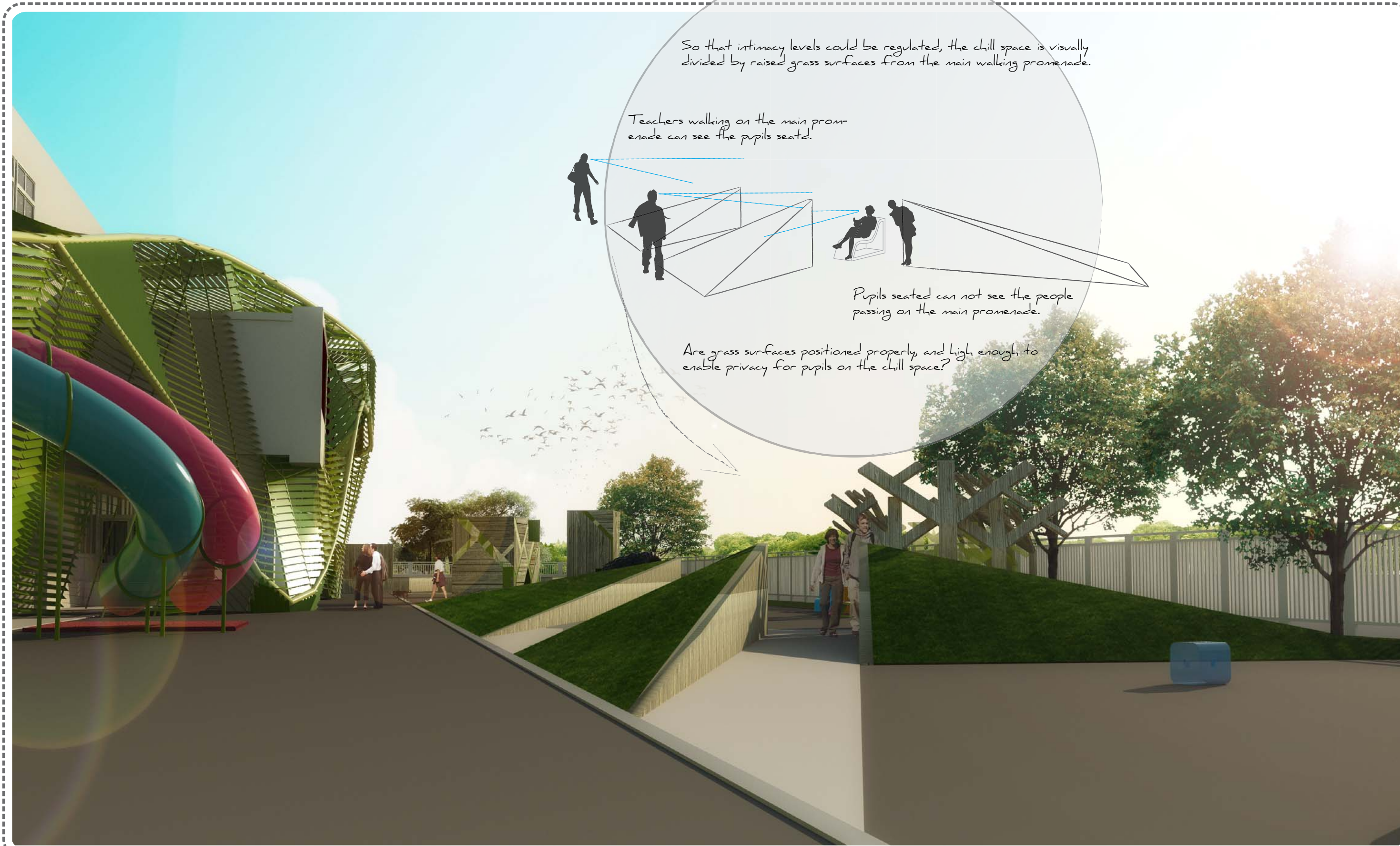
*"In our school lives the Tree of wisdom, the music around it prevents the boredom, listening it whispering with the Sun, we learn all day long, its' magic dust is falling on our heads, helping us the world around to comprehend."* - Milica i Stevan, age 9

23,07% High-Tech learning

76,9% Interaction with nature

How should we regulate privacy levels in the yard so that the pupils can do things on their own, and that the teachers can keep an eye on them overtly?



So that intimacy levels could be regulated, the chill space is visually divided by raised grass surfaces from the main walking promenade.

Teachers walking on the main promenade can see the pupils seated.

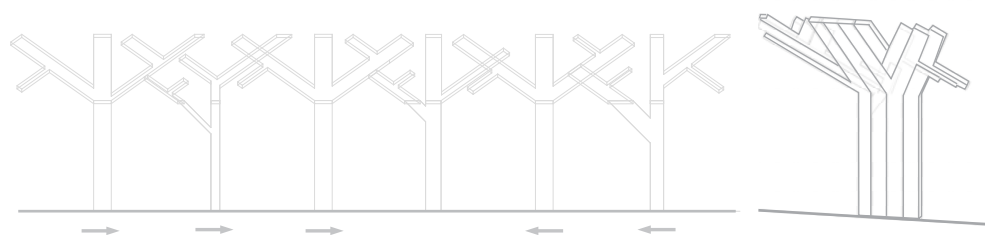
Pupils seated can not see the people passing on the main promenade.

Are grass surfaces positioned properly, and high enough to enable privacy for pupils on the chill space?

# A2 Chill space

## Developing the ideas

*"In our school lives the Tree of wisdom,  
the music around it prevents the boredom,  
listening it whispering with the Sun,  
we learn all day long!  
Its' magic dust is falling on our heads,  
helping us the world around to comprehend."  
- Milica i Stevan, age 11 and 12.*



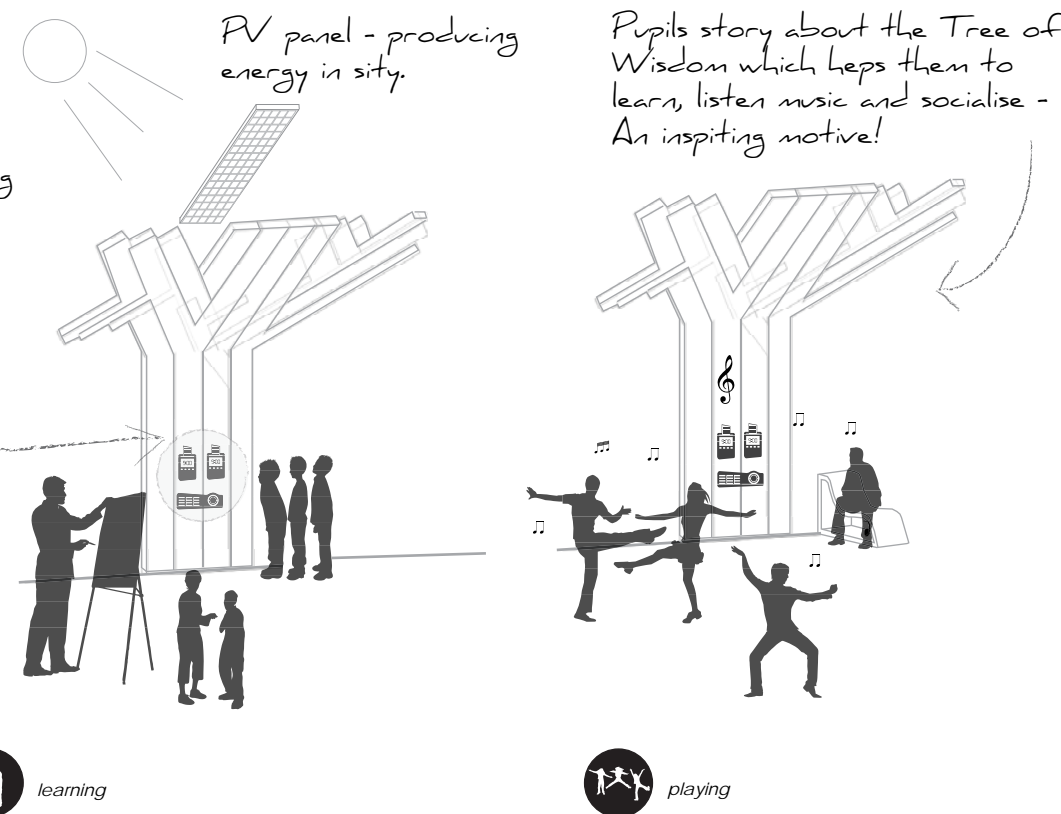
Relaxing in the sun or chatting under the shade?  
Chat with friends or read alone?  
- Just move the tree shaped canopy!



Chairs made out of recycled plastic? An element provoking learning about recycling? Local company making objects of molded recycled plastic exists!!!

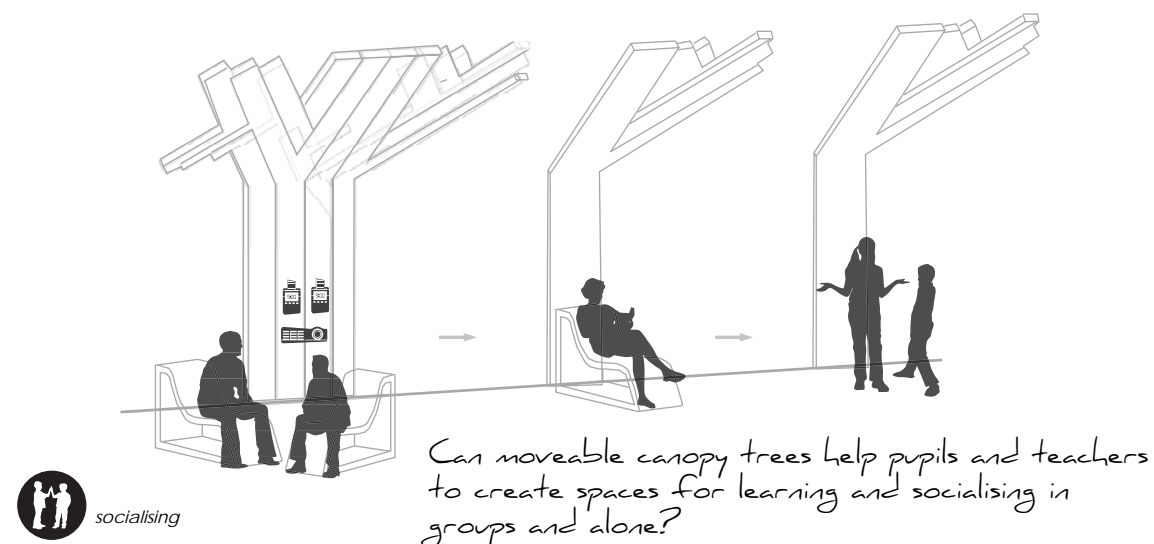
How should the school yards be redesigned to engage pupils in independent learning about energy and recycling issues?

Through what kind of learning activities should we engage students in monitoring energy production and consumption? Electricity production and consumption readers - a tool for learning?



### Pedagogical impact of space arising for this study:

- Well structured activities around thoughtfully designed space, impact the bonding of the teachers, pupils, neighbours and knowledge exchange.



### Pedagogical impact of space - Key messages from the analysis:

- "Joint use" spaces, characterised by balanced domination instead adult control seem to have a positive effect on creating sense of community.
- The size of spaces and the opportunity for the levels of privacy to be regulated, are factors determining how successfully a certain space impacts the develop-

# A3&C2 The Tunnel and the Slides

## Researching the issues

**National Educational goals**

- to develop and practice healthy life styles, raise awareness about the importance of one's own health and foster physical abilities
- develop communication and dialogue skills, the sense of solidarity, quality and efficient cooperation with others, fostering friendship and camaraderie

**Local Sustainable Development Strategy**

- supporting citizens to practice more sports and be more physically active
- reconstruction and renovation of existing sports and recreational infrastructure
- support for recycling activities

- SAFETY & SECURITY
- HEALTH
- PHYSICAL ACTIVITY
- FOOD
- SENSE OF COMMUNITY
- PARTICIPATION
- INCLUSION & EQUITY
- CULTURAL DIVERSITY
- SENSE OF A PLACE
- EDUCATION
- SCHOOL GROUNDS
- CONSTRUCTION & MATERIALS
- LIGHT
- VENTILATION, COOLING & HEATING
- WATER
- WASTE & RECYCLING
- TRANSPORT
- ENERGY
- NEW TECHNOLOGIES
- COST-EFFECTIVENESS
- MAINTENANCE & OPERATION
- FLEXIBILITY & ADAPTABILITY

**MACRO location challenges**



lack of public play spaces



the use of local football club's sports field must be paid

**MICRO location challenges**




lack of physically challenging, but safe play and sports equipment in the yard



football and basketball fields dominated by the older pupils

**TEACHERS' comments**


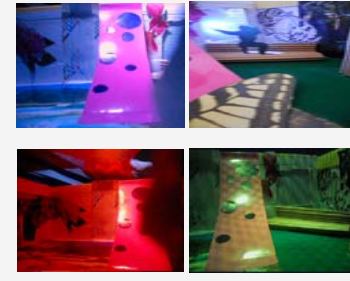
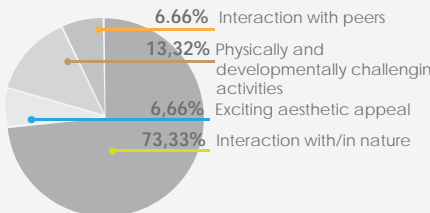
- Lack of facilities in the yard
- Spaces and equipment for play, fun, recreation, etc.
- Slides alongside the staircases
- Spaces and equipment for physically challenging, but safe, play
- Finding creative ways of using collected materials suitable for recycling



**PUPILS' comments**

Box no.4 Jump into the nature

- The yard is empty
- More equipment in the yard for interesting play
- It must be nicer, now it is very monotonous and the concrete is everywhere

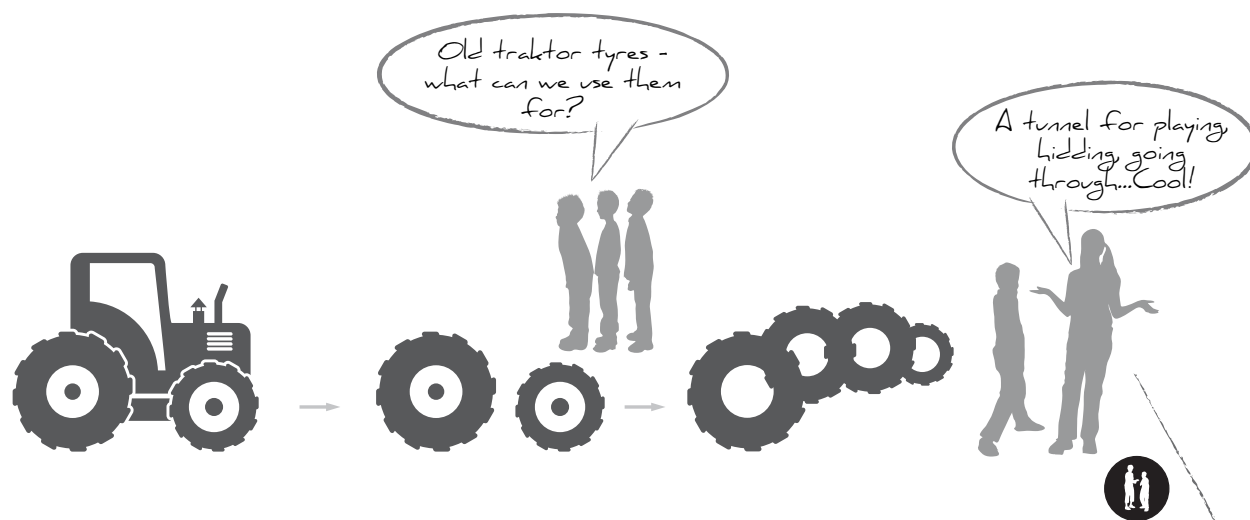
Percentage	Comment
6.66%	Interaction with peers
13.32%	Physically and developmentally challenging activities
6.66%	Exciting aesthetic appeal
73.33%	Interaction with/in nature



**A3&C2** The Tunnel and the Slides  
Developing the ideas

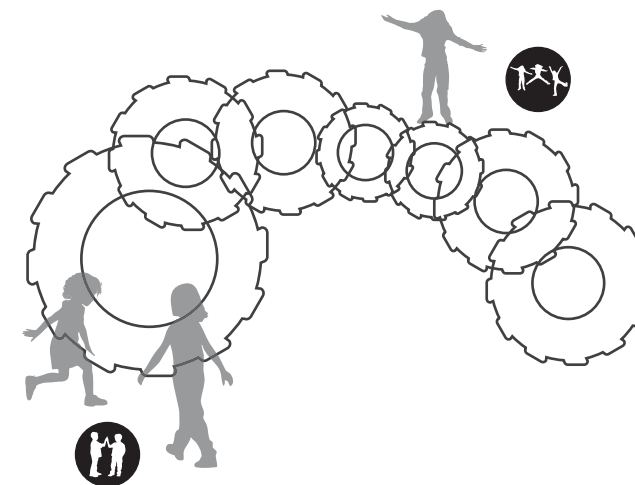
*"Up and down, the excitement is binding,  
through our school, we are sliding and gliding"*  
- Katarina and Tamara, age 7 and 8

*How should the school yard be redesigned to provide physically challenging, but safe and secure playspaces?  
Could parts of those playgrounds be made of recycled materials which could constitute environmental clues  
signalling the importance and the possibilities of recycling?*



*Using tyres from numerous tractors in the neighbourhood to make play equipment - a tunnel?*

*Old tractor tyres - a case for learning about the possibilities of recycling and reusing?*



socialising

Pedagogical impact of space - Key messages from the analysis:

- Sport fields and playgrounds are good places for bonding, building group cohesion and developing social skills.

playing

Pedagogical impact of space - Key messages from the analysis:

- Unequal ownership of certain parts of or within the space impacts to what extent certain pupils feel included and treated as equals.
- Feeling of inclusion or exclusion can be developed through (physical) activities on sports fields, thus further weaken or strengthen the sense of community.

learning

Pedagogical impact of space - Key messages from the analysis:

- Playgrounds and sport fields are not just places important for exercise, but for learning as well.
- Pupils easily pick up information from their environment.

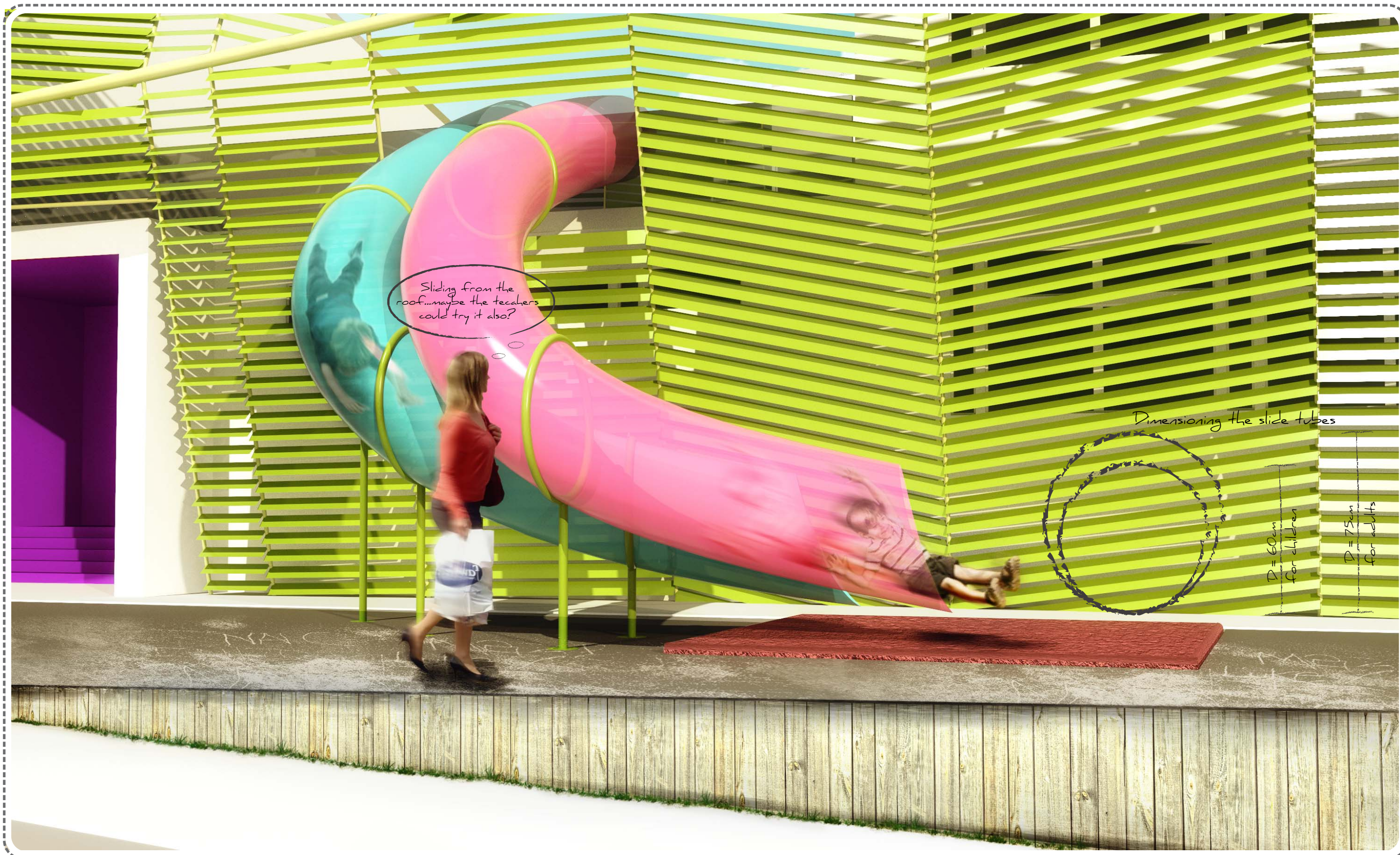
# A3&C2 The Tunnel and the Slides

Developing the ideas

*"Up and down, the excitement is binding,  
through our school, we are sliding and gliding"*  
- Katarina and Tamara, age 7 and 8

*How should the school yard be redesigned to provide physically challenging, but safe and secure playspaces?  
Could there be alternative ways of going through the school?*

*Coming down from the roof garden - is sliding an option?*



# A4&5 Tree houses

## Researching the issues

**National Educational goals**

- develop and practice healthy life styles, raise awareness about the importance of one's own health and safety, and the need to develop and foster physical abilities
- develop communication and dialogue skills, the sense of solidarity, quality and efficient cooperation with others, fostering friendship and camaraderie

**Local Sustainable Development Strategy**

- creating small children's parks with the necessary furniture
- reconstruction and renovation of existing sports and recreational infrastructure
- development of education programs for children and young people as a way of preventing social problems

- SAFETY& SECURITY
- HEALTH
- PHYSICAL ACTIVITY
- FOOD
- SENSE OF COMMUNITY
- PARTICIPATION
- INCLUSION & EQUITY
- CULTURAL DIVERSITY
- SENSE OF A PLACE
- EDUCATION
- SCHOOL GROUNDS
- CONSTRUCTION & MATERIALS
- LIGHT
- VENTILATION, COOLING&HEATING
- WATER
- WASTE & RECYCLING
- TRANSPORT
- ENERGY
- NEW TECHNOLOGIES
- COST-EFFECTIVENESS
- MAINTENANCE & OPERATION
- FLEXIBILITY & ADAPTABILITY

**MACRO location challenges**



lack of public play spaces

**MICRO location challenges**




lack of equipment in the yard



lack of space for the youngest pupils

**TEACHERS' comments**

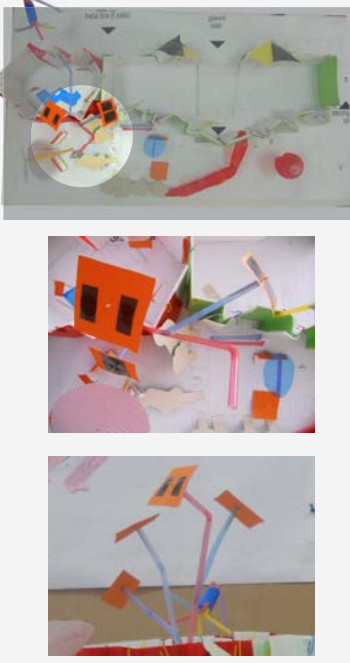
- Lack of facilities in the yard
- More furnished and equipped spaces in the yard
- Spaces and equipment for play, fun, recreation, etc.
- Safe and secure access to the school yard after school hours



**PUPILS' comments**

- We want more fun on the playground
- Private space accessible at all times
- It must be nicer, now it is very monotonous and there is too much concrete
- We would like to use the yard after school also
- More equipment for play

**Model no.4 Green wave - Spinning tree**



**A4&5** Tree houses

Developing the ideas

*How should the school yard be transformed to become fun, engaging, safe environment for playing, learning and development of social skills, crucial for their lives in turbulent times, in multiethnic communities?*



Should we have a house on a tree, or a tree on a house?



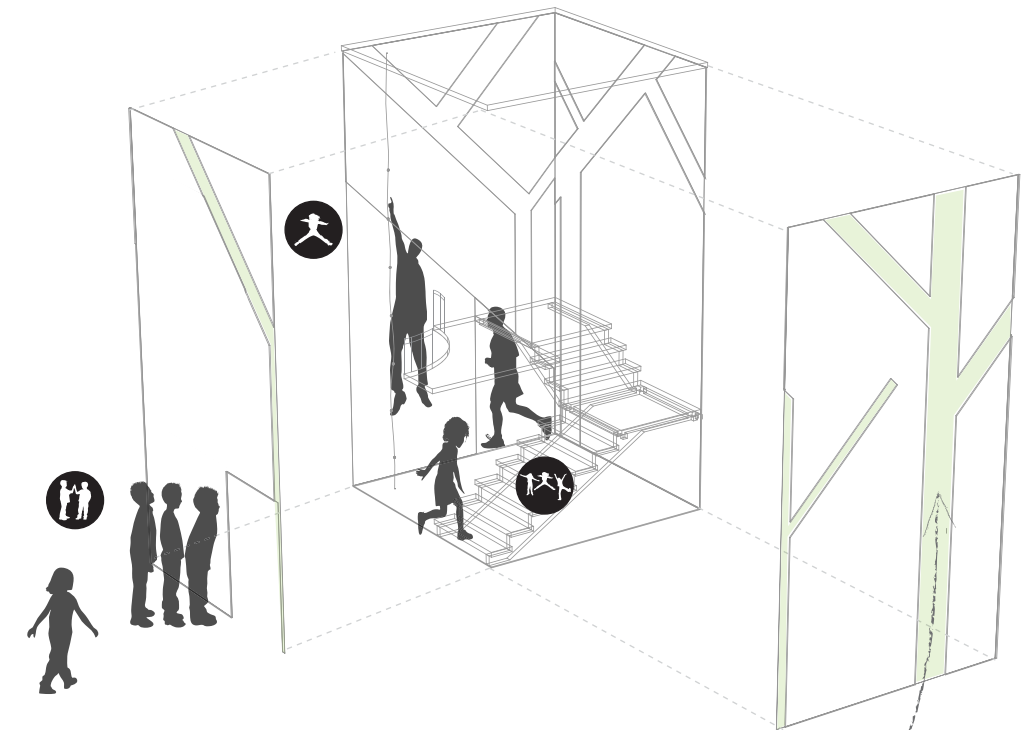
Mulberry trees from the nearby Hvezdislavova street as an inspirational motive!



Transposing abstract tree shapes onto the walls of the tree house.

We want more fun on the playground!!!

Opportunity to play and socialise without constant and direct supervision of teachers - will it enable the children to establish better social relations and improve community cohesion?



Children should have their own space in the yard...they should have their privacy, so they can play and socialise on their own.

Transparent tree shaped parts  
- are they private enough for pupils?  
- are they transparent enough for teachers?



**Pedagogical impact of space - Key messages from the analysis:**

- Playgrounds and sport fields are not just places important for exercise, but for learning as well
- Playgrounds are places for bonding, building group cohesion and developing social skills
- The size of spaces and the opportunity for the levels of privacy to be regulated, determine how successfully a certain space impacts the development of sense of community
- Unequal ownership of certain parts of or within the space impacts to what extent certain pupils feel included and treated as equals.
- Feeling of inclusion or exclusion can be developed through (physical) activities on sports fields, thus further weaken or strengthen the sense of community.

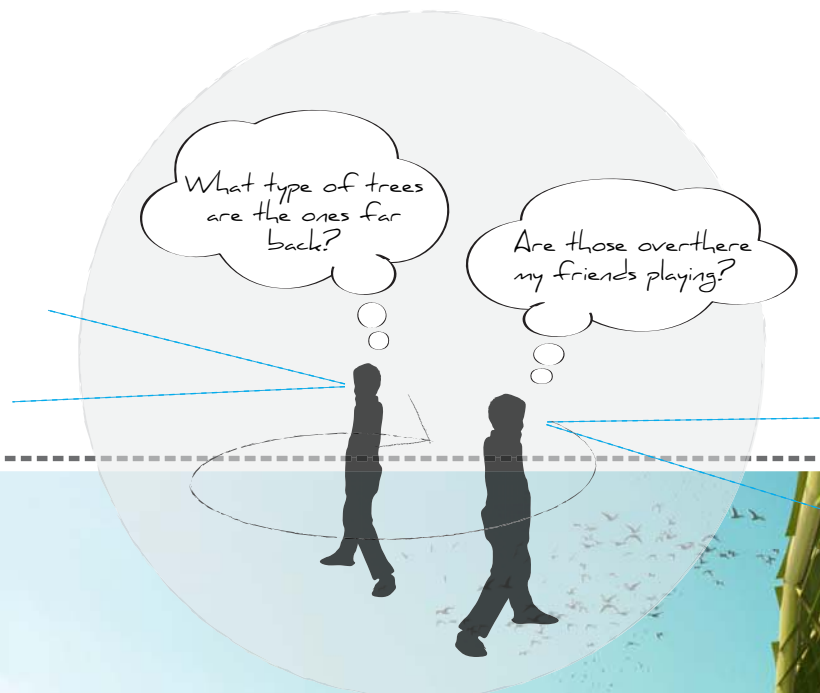
# A4&5 Tree houses

Developing the ideas

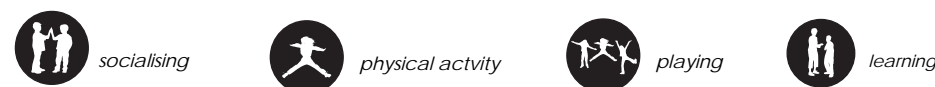
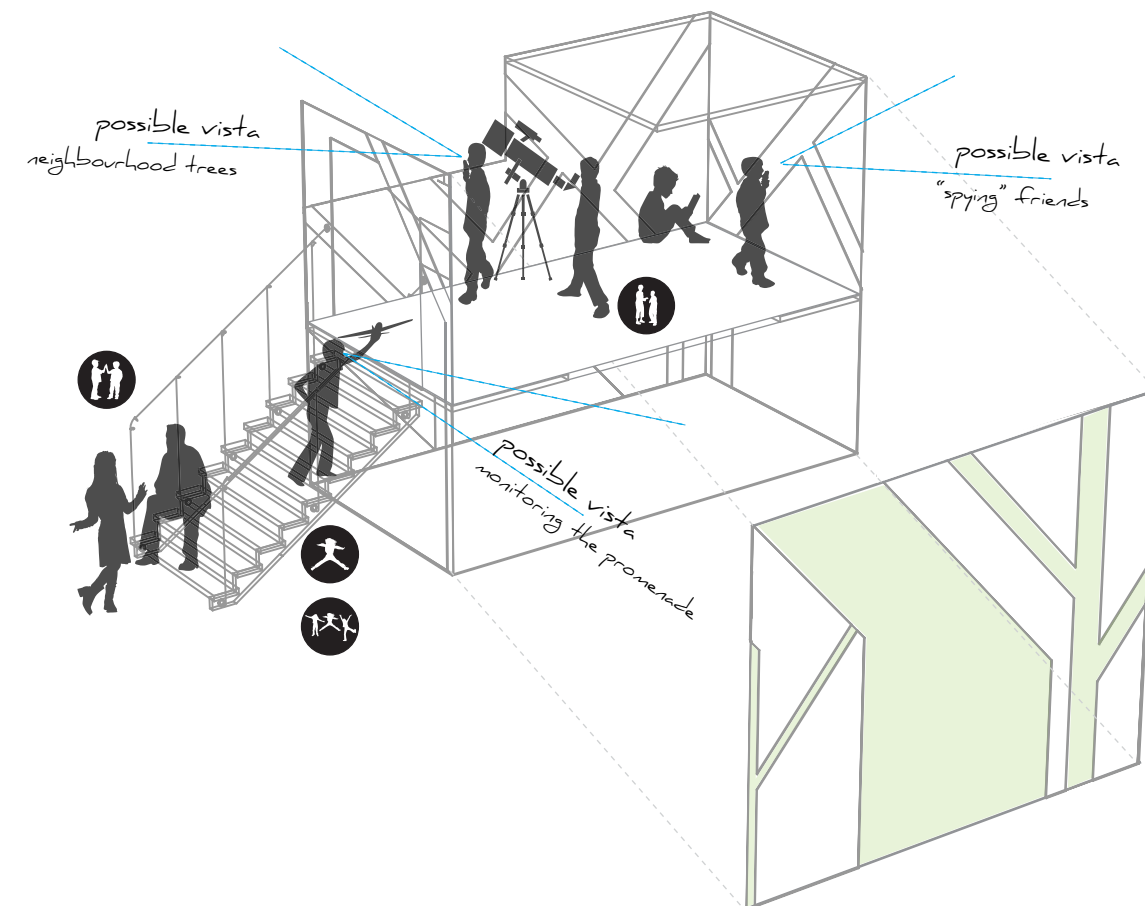
"Spinning tree, spinning tree,  
on your platforms we like to climb,  
it is because they drive us all the way around"  
- Anja, Luka, Goran, age 9 and 11

How should the school yard be transformed to become fun, engaging, safe environment for playing, learning and development of social skills, crucial for their lives in turbulent times, in multiethnic communities?

Or should we stimulate the children to spin around by opening up interesting vistas through the walls of the tree house?



Could children use the spyglass to watch and learn about the stars, "spy" what are their friends doing in the yard, or observe the trees in the neighbourhood?



### 🔍 Pedagogical impact of space - Key messages from the analysis:

- Playgrounds are places for bonding, building group cohesion and developing social skills
- The size of spaces and the opportunity for the levels of privacy to be regulated, determine how successfully a certain space impacts the development of sense of community
- Unequal ownership of certain parts of or within the space impacts to what extent certain pupils feel included and treated as equals.
- Feeling of inclusion or exclusion can be developed through (physical) activities on sports fields, thus further weaken or strengthen the sense of community.

# A6 Raised beds

## Researching the issues

**National Educational goals**

- to develop and practice healthy life styles, raise awareness about the importance of one's own health
- different types of cooperation with the local community and the broader social environment
- efficient cooperation with families by involving parents or guardians
- develop communication and dialogue skills, the sense of solidarity, quality and efficient cooperation with others, fostering friendship and camaraderie
- to create awareness about the animal protection and preservation
- openness to teaching innovations

**Local Sustainable Development Strategy**

- creating new green areas
- development of new educational concepts
- development of entrepreneurship
- development of small and medium enterprises
- development of production workshops for the disabled and youth with special needs
- development of the workshops and activities for senior citizens
- education programs for children and young people as a way of preventing social problems
- improving the competitiveness of agriculture
- subventions for organic farmers
- animation, motivation and education of individuals who want to start their own business
- development of youth entrepreneurship


SAFETY & SECURITY	HEALTH
PHYSICAL ACTIVITY	FOOD
SENSE OF COMMUNITY	PARTICIPATION
INCLUSION & EQUITY	CULTURAL DIVERSITY
SENSE OF A PLACE	EDUCATION
SCHOOL GROUNDS	CONSTRUCTION & MATERIALS
LIGHT	VENTILATION, COOLING & HEATING
WATER	WASTE & RECYCLING
TRANSPORT	ENERGY
NEW TECHNOLOGIES	COST-EFFECTIVENESS
MAINTENANCE & OPERATION	FLEXIBILITY & ADAPTABILITY

**MACRO location challenges**




lack of interest of the youngest for cultivating very fertile local land

**MICRO location challenges**



lack of equipment and activities in the yard



designated space for school garden standing empty

**TEACHERS' comments**

- Raising awareness about the importance of food for healthy life is a must
- We need gardens for growing food and herbs
- Nutritionists or local farmers should be included in educating children about healthy food and nutrition
- Connecting the garden, the food production with the food consuming and composting activities



**PUPILS' comments**

- It would be cool if we could grow our own food!
- The food produced in the garden could be prepared in the kitchen
- In the yard we should have some small animals running around





Box no.16 Learning with animals





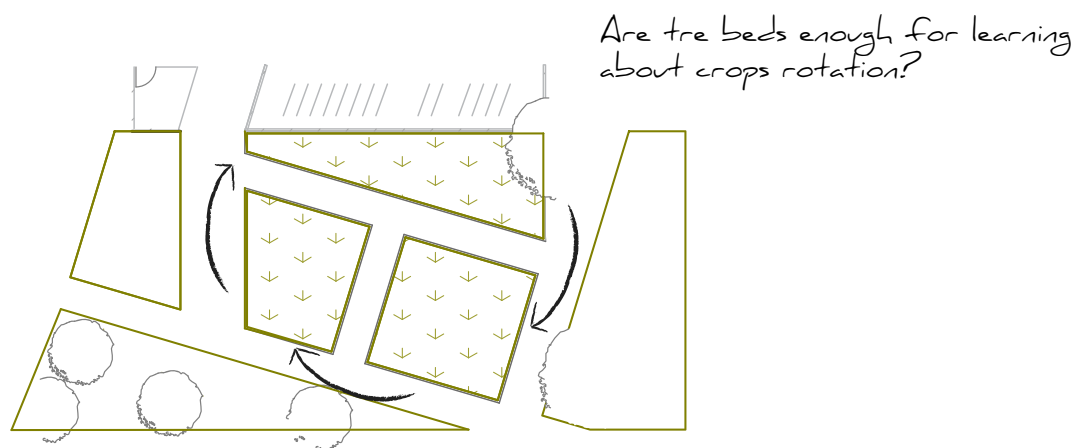
# A6 Raised beds

Developing the ideas

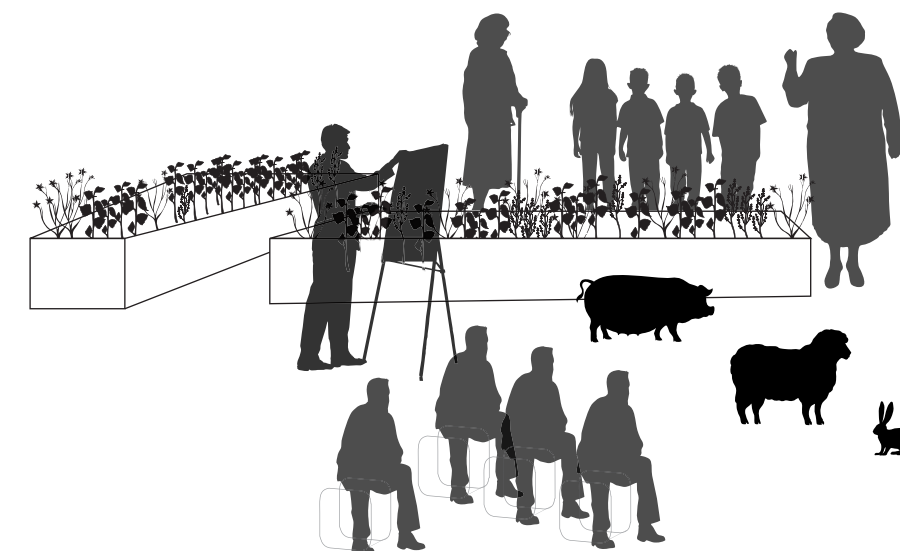
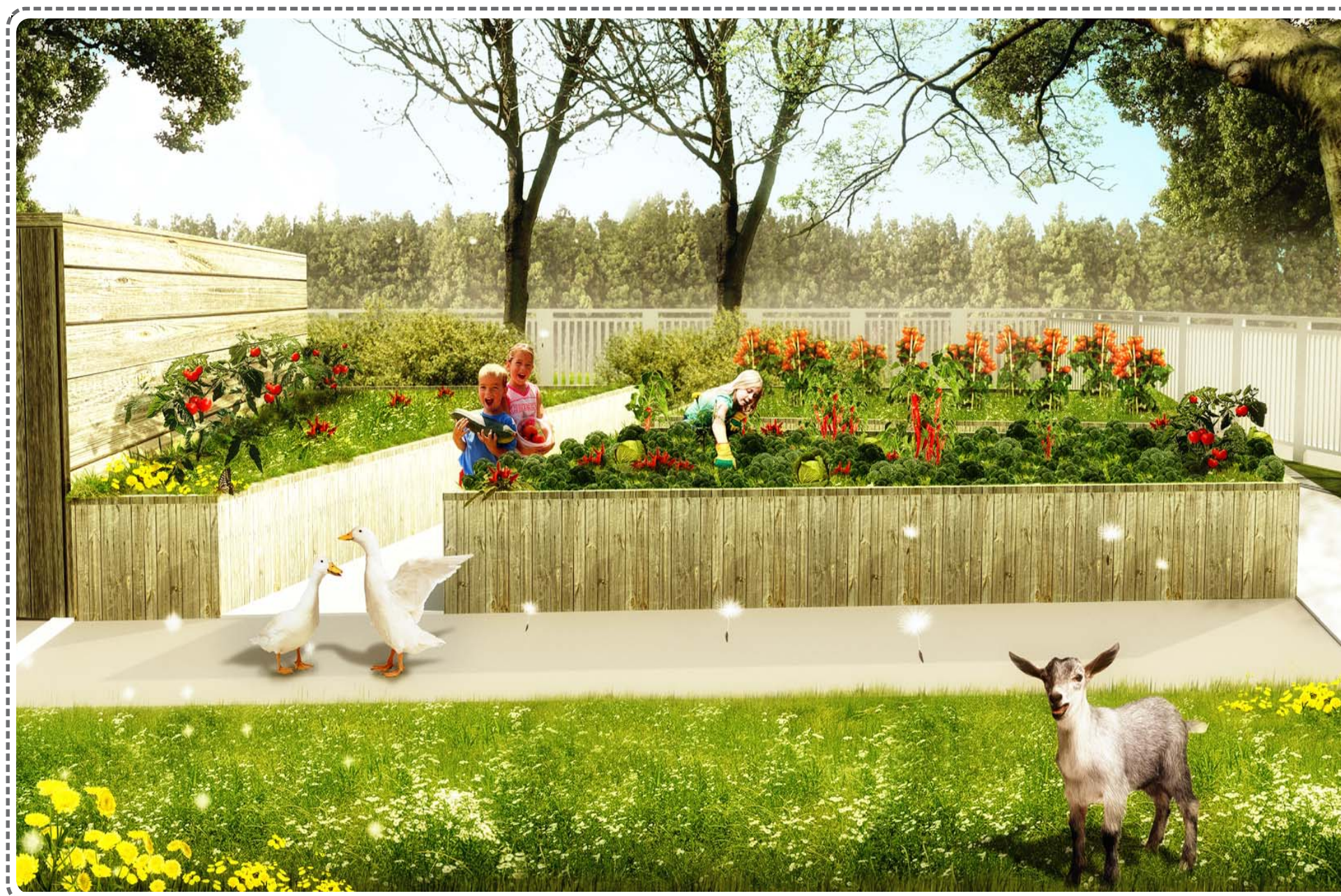
*"Healthy and fit we must stay,  
growing our own food is the right way to do it,  
hip hip hooray!" - Lazar, Darko, Misa, Ogi, age 8 and 9*

*Can farming be cool?*

*Could raised beds present a valuable and stimulating learning resource for the whole community, so that the main developmental opportunity of the town - the agriculture and livestock- is made more attractive to the future generations?*



*How could grandparents be included into children's education? As they are knowledgeable about planting and cultivation could they assist biology teacher?*



*What could children learn from watching and taking care of small animals?*

 *working with local professionals*

 *learning*

**Pedagogical impact of space - Key messages from the analysis:**

- The quality of food impacts children's health and consequently their ability to concentrate and learn in school.
- Food growing facilities can be a valuable learning tool only when the learning activities around them are well structured, connection to the curriculum is clear, and the roles and responsibilities of teachers, pupils and community members are well defined.

# A7 Bike shed

## Researching the issues

**National Educational goals**

- foster physical abilities
- develop the abilities to find, analyze, utilize and communicate information, while skillfully and effectively using information and communication technologies;
- develop communication and dialogue skills, the sense of solidarity, quality and efficient cooperation with others, fostering friendship and camaraderie
- to create awareness about the importance of sustainable development, protection and preservation of nature and the environment, ecological ethics
- openness to teaching innovations

**Local Sustainable Development Strategy**

- supporting citizens to practice more sports and be more physically active
- development of roads, ancillary road infrastructure and public transport
- the reconstruction and renovation of existing sports and recreational infrastructure
- development of bicycle traffic in the town
- construction of supporting infrastructure for cycling corridor
- improving access to the internet in the town

- SAFETY & SECURITY
- HEALTH
- PHYSICAL ACTIVITY
- FOOD
- SENSE OF COMMUNITY
- PARTICIPATION
- INCLUSION & EQUITY
- CULTURAL DIVERSITY
- SENSE OF A PLACE
- EDUCATION
- SCHOOL GROUNDS
- CONSTRUCTION & MATERIALS
- LIGHT
- VENTILATION, COOLING & HEATING
- WATER
- WASTE & RECYCLING
- TRANSPORT
- ENERGY
- NEW TECHNOLOGIES
- COST-EFFECTIVENESS
- MAINTENANCE & OPERATION
- FLEXIBILITY & ADAPTIBILITY

**MACRO location challenges**



construction of new cycling routes and promotion of cycling is steadily gaining momentum


**MICRO location challenges**



lack of appropriate, safe and secure bike storage in the school yard

**TEACHERS' comments**



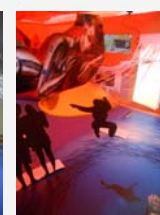
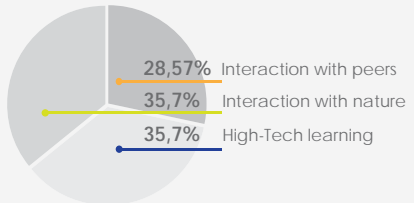
- Lack of safe and secure bike storage in the yard
- Lack of appropriate cycling track to school
- Initiating the project with the municipality for creating safe and secure cycling track connecting the school with the town centre
- Promoting cycling to school as a part of a healthy lifestyle
- Education about ecological issues



**PUPILS' comments**

Box no.6 Electric, freakish, blue wave

- The rich kids come to school by car, they want to stand out of the crowd
- We love cycling to school!
- The lack of spaces for secure bike storage



# A7 Bike shed

## Developing the ideas

*Electric, freakish, blue wave,  
we travel to school at the speed of light,  
we roll those pedals, we cycle,  
for the health of our planet Earth,  
we are ready to fight!*  
- Ivan, Milan, age 9 and 10



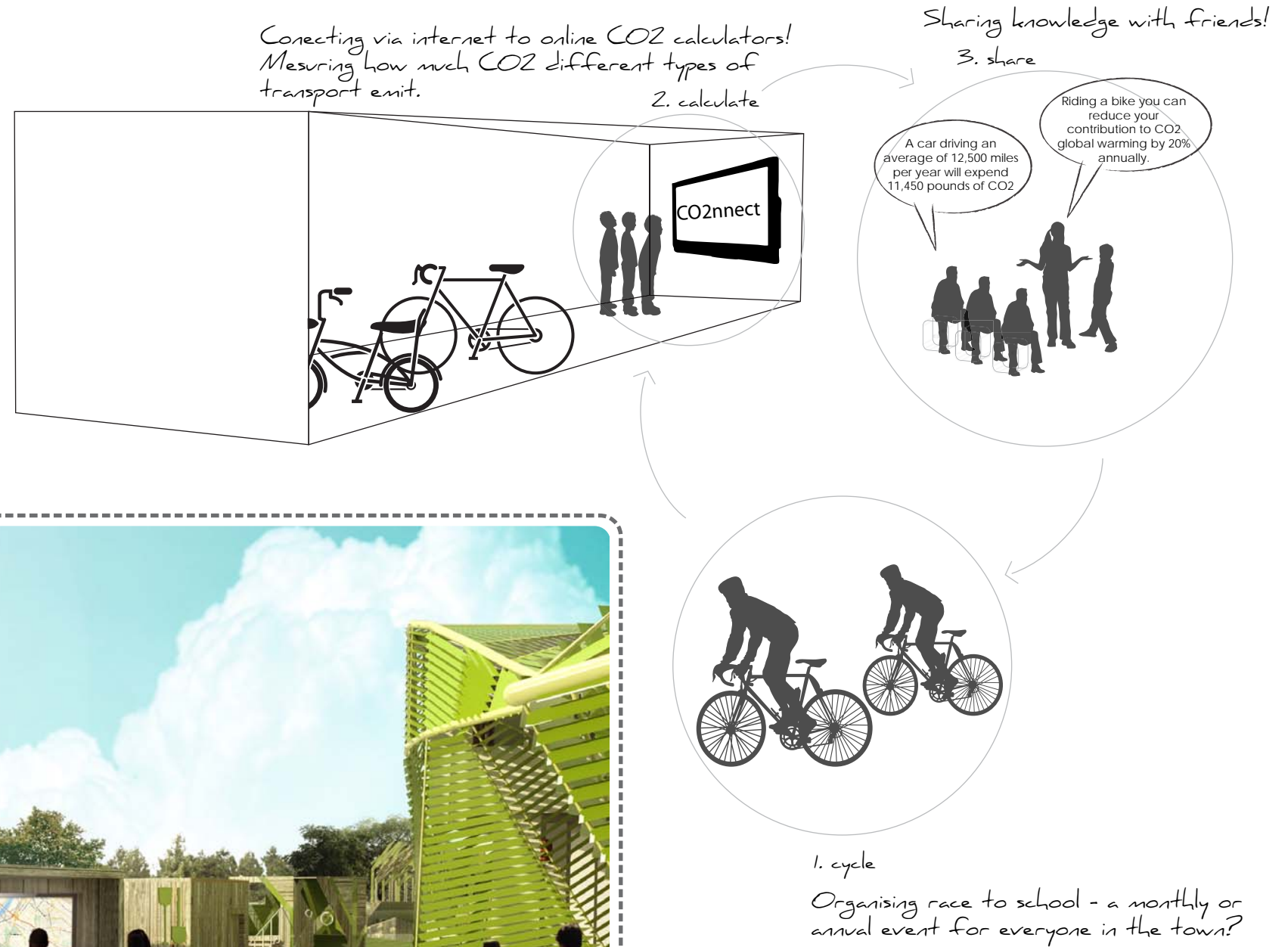
Space needed for one bike in the shed.

Schools should provide bike sheds for 10% of the total number of pupils plus 5-10% during the spring and summer months! For 400 pupils in the school it is 40 + (20 to 40 extra) = 60 approx. Current space in bike shed allows 27 bikes to be stored. Additional storage is needed!



Is the sign for bike shed clear enough?

Could bike sheds become engaging learning platforms? Could stimulating activities around them unite students, strengthen the team spirit, and promote cycling as an important physical activity?



learning



physical activity

### Pedagogical impact of space - Key messages from the analysis:

- Having safe and secure bike storage spaces is very important if we want to encourage pupils to cycle more to school.
- Well structured activities around thoughtfully designed space, impact the bonding of the teachers, pupils, neighbours and knowledge exchange.
- Feeling of inclusion or exclusion can be developed through (physical) activities, thus further weaken or strengthen a sense of community.

# A8 Experimental houses

## Researching the issues

**National Educational goals**

- different types of cooperation with the local community and the broader social environment
- to develop the abilities to find, analyze, utilize and communicate information, while skillfully and effectively using information and communication technologies;
- develop communication and dialogue skills, the sense of solidarity, quality and efficient cooperation with others, fostering friendship and camaraderie
- quality education, based on the achievements of modern science, adapted to the age of a child, pupil or adult and to his/her personal educational needs;
- child- and pupil- oriented education through different forms of teaching and learning, develop motivation for learning
- awareness about the importance of sustainable development, protection and preservation of nature and the environment, ecological ethics, and animal protection
- openness to teaching innovations

**Local Sustainable Development Strategy**

- creating new green and forest coverage areas
- development of new educational concepts
- procurement of equipment and teaching materials for environmental education
- education about ecological challenges
- creation, protection and improvement of spaces with natural values
- improvement of ecosystem
- development and creation of "Street corners – children's eco oasis"
- establishing the networks of children's public eco oasis
- education programs for children and young people as a way of preventing social problems
- protecting the local biodiversity

- SAFETY & SECURITY
- HEALTH
- PHYSICAL ACTIVITY
- FOOD
- SENSE OF COMMUNITY
- PARTICIPATION
- INCLUSION & EQUITY
- CULTURAL DIVERSITY
- SENSE OF A PLACE
- EDUCATION
- SCHOOL GROUNDS
- CONSTRUCTION & MATERIALS
- LIGHT
- VENTILATION, COOLING & HEATING
- WATER
- WASTE & RECYCLING
- TRANSPORT
- ENERGY
- NEW TECHNOLOGIES
- COST-EFFECTIVENESS
- MAINTENANCE & OPERATION
- FLEXIBILITY & ADAPTABILITY

**MACRO location challenges**



resources about local habitat can be found in local library in the town centre, though they are very scarce


**MICRO location challenges**



lack of equipment and learning activities in the front yard

**TEACHERS' comments**

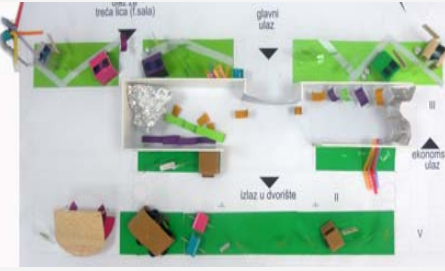

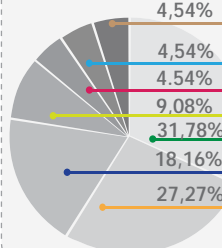
- Lack of facilities in the yard
- Teaching and learning must be expanded into the yard
- We need an outdoor classroom
- We need spaces for stimulative and active learning
- Coming to school does not mean just sitting and learning in the classroom



**PUPILS' comments**

Model no.1  
Hocus, Pocus, Preparandus!  
School for learning by experimenting

- The yard is empty
- Constant access to the school yard
- It must be nicer, now it is very monotonous
- Lack of spaces for learning and playing during the free time
- It would be nice to have some equipment for experiments

Percentage	Comment
4,54%	Physically and developmentally challenging activities
4,54%	Exciting aesthetic appeal
4,54%	Interaction with animals
9,08%	Interaction with nature
31,78%	Learning by experimenting
18,16%	High-Tech learning
27,27%	Interaction with peers

# A8 Experimental houses

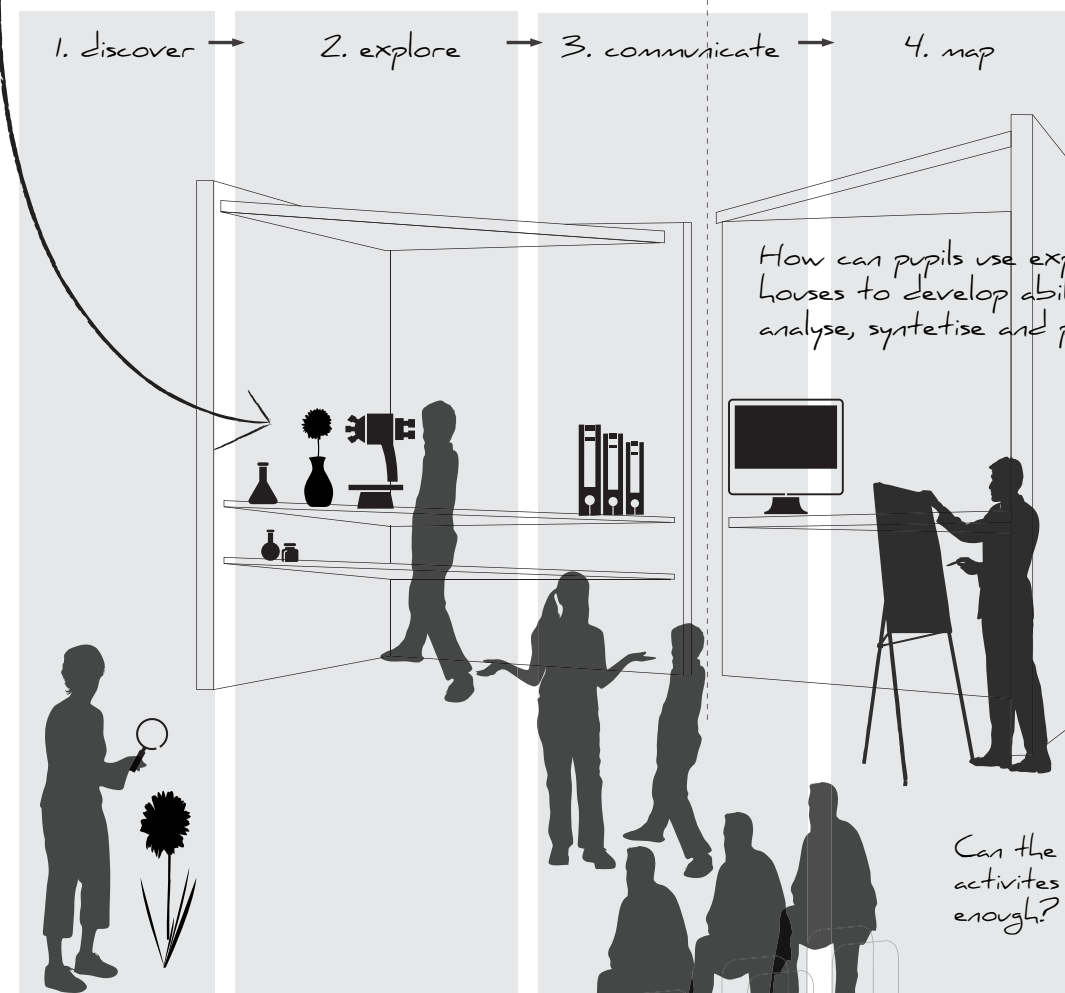
Developing the ideas

*Hocus, Pocus, Preparandus!*  
*We learn by experimenting.*  
- Ivan and Tijana, age 13 and 14

How should we redesign spaces in the school yard to support pupils to independently explore the local habitat and actively participate in its preservation?



Can pupils use the resources (microscope, computer, magnifying glasses) independantly?



Can the houses support diverse activites - are they flexible enough?

Through what kind of learning activites can we connects learning about issues in the local habitat? Will these activites impact pupils attachment to the place?



### Pedagogical impact of space - Key messages from the analysis:

- Well structured activities around thoughtfully designed space, impact the bonding of the teachers, pupils, neighbours and knowledge exchange.
- Flexible and adaptable spaces across the school enables pupils to learn according to their own paste, and socialise with their peers and teachers.

# B1, C4 & D3 Corridors

## Researching the issues

**National Educational goals**

- develop communication and dialogue skills, the sense of solidarity, quality and efficient cooperation with others, fostering friendship and camaraderie
- develop aesthetic perception and good taste
- to acquire quality knowledge and skills
- openness to teaching innovations

**Local Sustainable Development Strategy**

- development of new educational concepts
- education programs for children and young people as a way of preventing social problems

**MICRO location challenges**



lack of activities in the corridors




monotonous space

- SAFETY & SECURITY
- HEALTH
- PHYSICAL ACTIVITY
- FOOD
- SENSE OF COMMUNITY
- PARTICIPATION
- INCLUSION & EQUITY
- CULTURAL DIVERSITY
- SENSE OF A PLACE
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- NEW TECHNOLOGIES
- COST-EFFECTIVENESS
- MAINTENANCE & OPERATION
- FLEXIBILITY & ADAPTABILITY

**TEACHERS' comments**


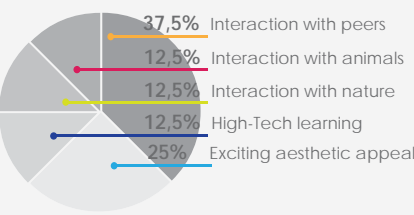
- There are no spaces in school where parents could be admitted
- There are no spaces in school where we could communicate with pupils outside of the classrooms
- Corridors are big, but the space is not used well
- Storage spaces in corridors for both teachers and pupils
- Monotonous corridors cause petit vandalism
- Some calm spaces would be good for kids




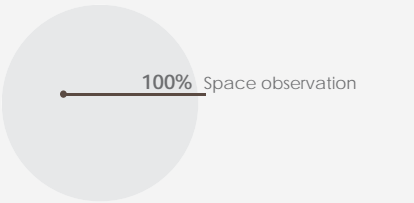
**PUPILS' comments**

- There are no spaces in school where pupils could socialise, read, relax outside the classes
- There are no places where pupils could bring their parents and neighbours
- The time with teachers is spent only in classrooms
- The corridors must be changed, we need places to sit, we need some tables
- The school is old-fashioned, we do not like the colors
- The colors must be more cheerful, all the colors are gray and dull
- We want color splash!


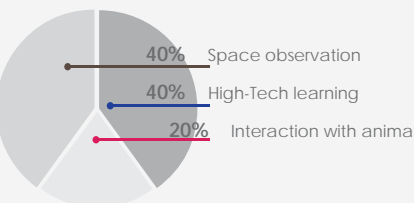
**Box no.3 Crazy school - Learning under the rainbow**

**Box no.11 Space school - Learning among the stars**

**Box no.8 NLO school - Riding the light wave**

B1, C4  
& D3

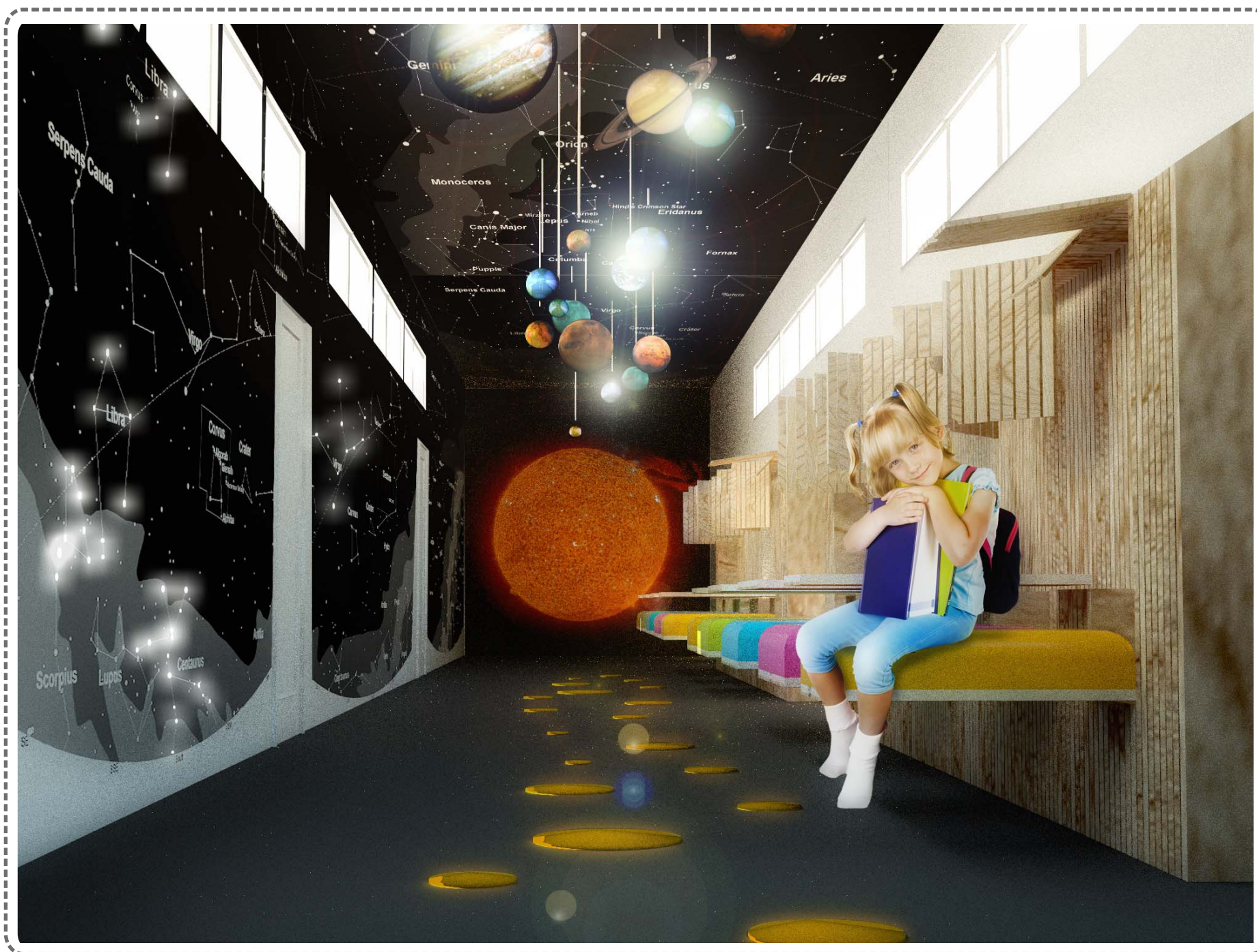
# Corridors

Developing the ideas

*Adventurous pathways*

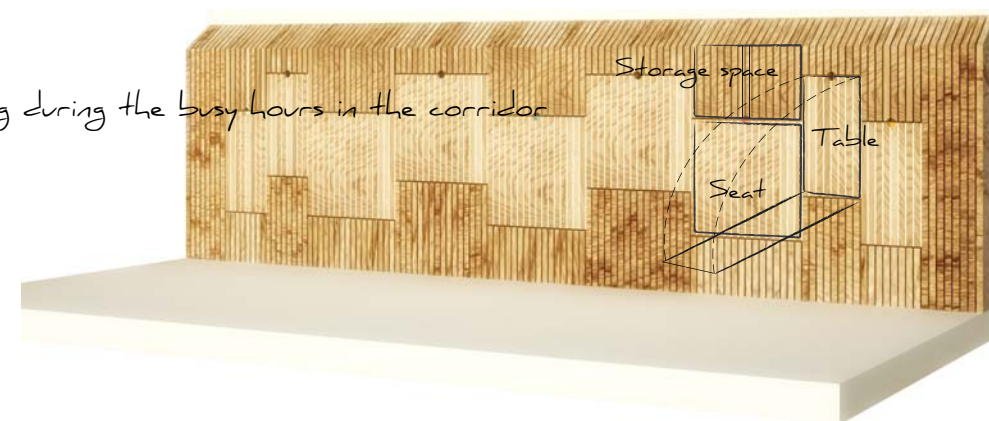
Corridor - ground floor - *Learning among the stars*

Projecting star constellations via star theatre onto the corridor walls  
- Will this instalation encourage pupils to continue to develop their interest for stars, galaxies, and outerspace?



How should we bring the learning into the corridors?

Closed seating during the busy hours in the corridor



Open seating during the busy hours in the corridor  
Could pupils interaction with the space increase their sense of ownership, and decrease the vandalism and destruction of property in school?



**Pedagogical impact of space - Key messages from the analysis:**

- The size of spaces and the opportunity for the levels of privacy to be regulated, determine how successfully a certain space impacts the development of sense of community.
- Unequal ownership of certain parts of or within the space impacts to what extent certain pupils feel included and treated as equals.
- The design of corridors with features stimulating interactions, was seen as an important factor impacting the development of sense of community.
- Well structured activities around thoughtfully designed space, were another factor brought into relation with the bonding of the teachers, pupils, neighbours and knowledge exchange
- Joint use" spaces, characterised by balanced domination instead adult control seem to have a positive effect on creating sense of community
- The design features must be skilful interpretations of ideas, wishes and beliefs of school members, in order to contribute to sense of a place.

B1, C4 & D3

# Corridors

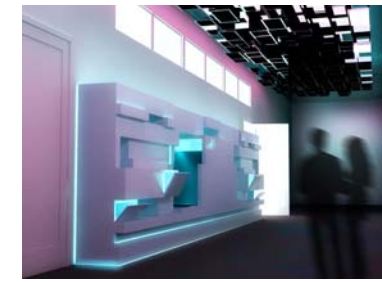
Developing the ideas

*Adventurous pathways*

Corridor - 1st floor - Light ship -  
Can pupils use colours and sounds to create atmosphere according to their mood?



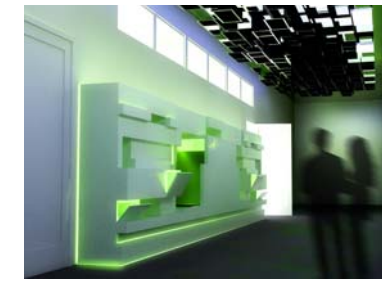
1. relax



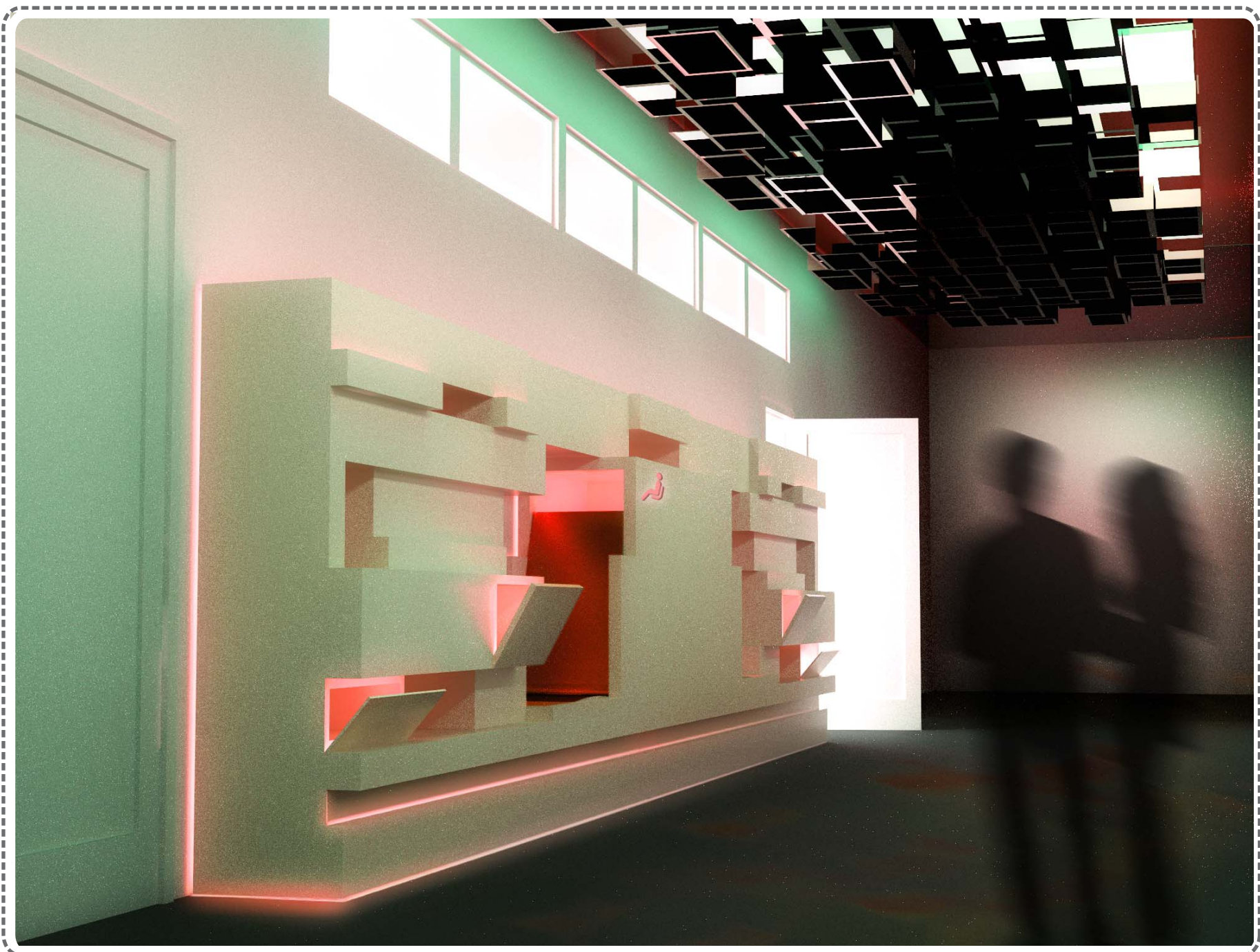
2. calm



3. excite

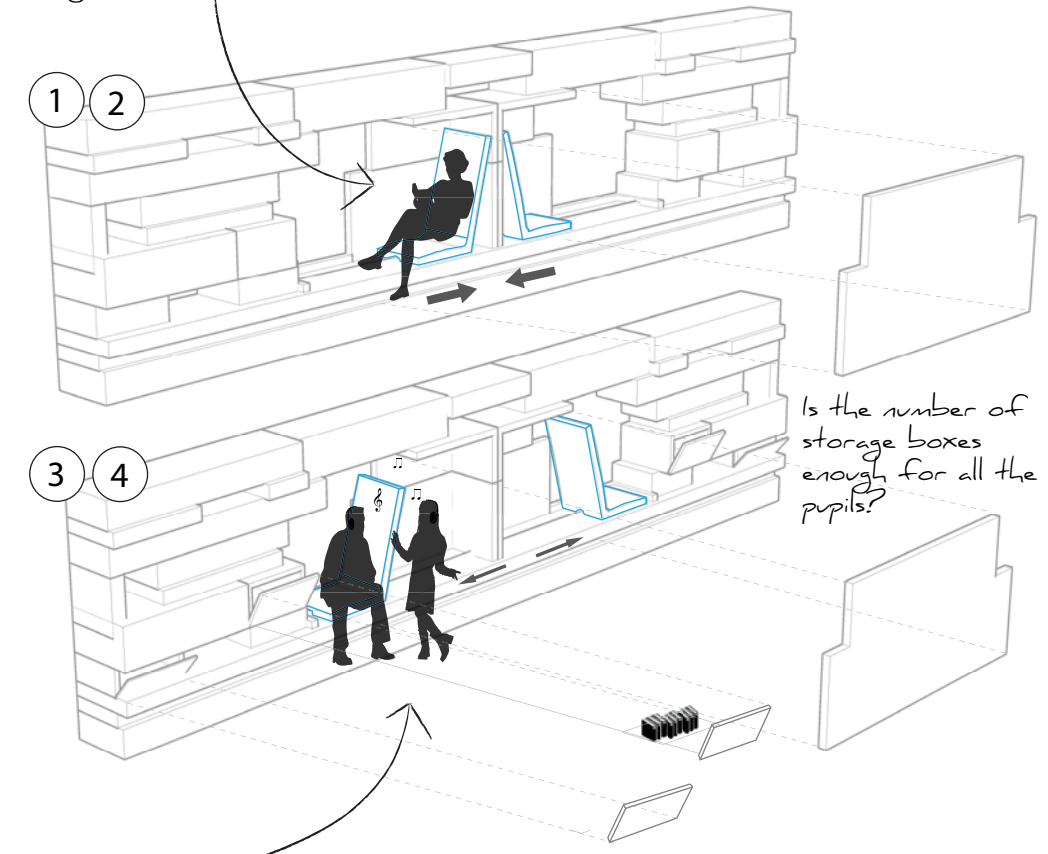


4. energise



Can we regulate moods and feelings by regulating atmosphere?

Slide the seat backward for rest, relaxation, or meditation! Turn on the appropriate light and music combination.



Slide the seat forward for to signal your friends that you are in a mood for chat.

-  socialising
-  learning
-  playing

**Pedagogical impact of space - Key messages from the analysis:**

- The size of spaces and the opportunity for the levels of privacy to be regulated, determine how successfully a certain space impacts the development of sense of community.
- Unequal ownership of certain parts of or within the space impacts to what extent certain pupils feel included and treated as equals.
- The design of corridors with features stimulating interactions, was seen as an important factor impacting the development of sense of community.
- Well structured activities around thoughtfully designed space, were another factor brought into relation with the bonding of the teachers, pupils, neighbours and knowledge exchange
- Joint use" spaces, characterised by balanced domination instead adult control seem to have a positive effect on creating sense of community
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B1, C4 & D3

# Corridors

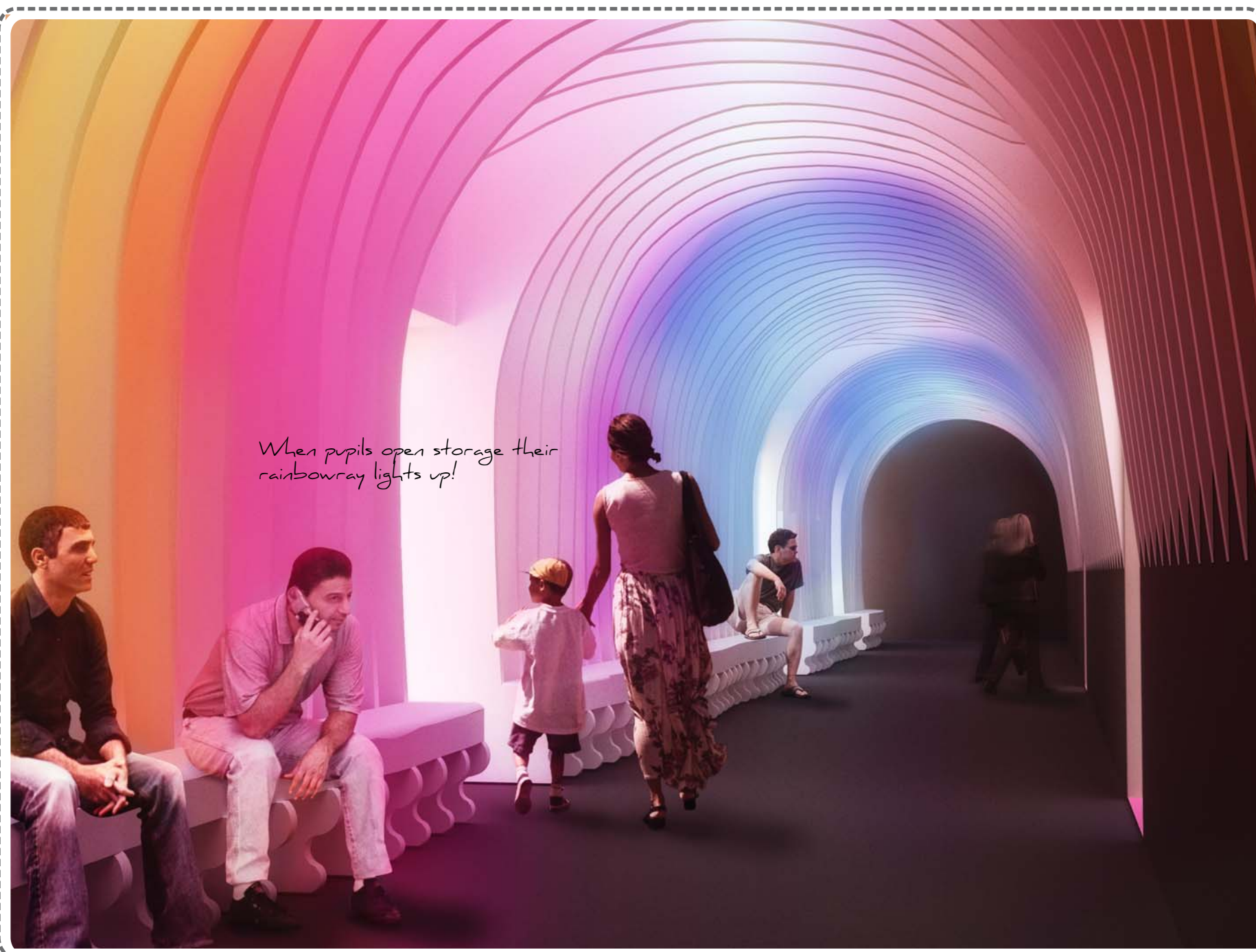
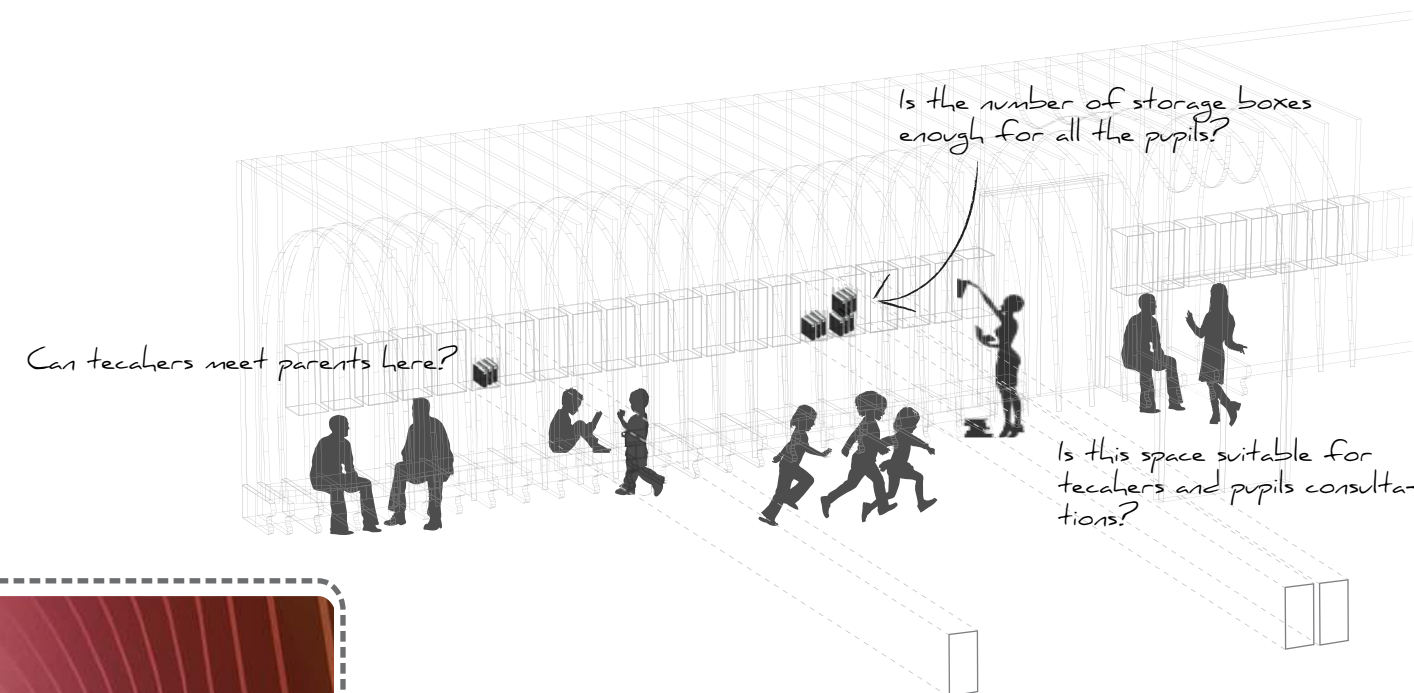
Developing the ideas

*Adventurous pathways*

How should we animate corridors?

Corridor - 2nd floor- Rainbow tunnel

To whom the space belongs?  
Using the color to signal pupils presence in school?



**Pedagogical impact of space - Key messages from the analysis:**

- The size of spaces and the opportunity for the levels of privacy to be regulated, determine how successfully a certain space impacts the development of sense of community.
- Unequal ownership of certain parts of or within the space impacts to what extent certain pupils feel included and treated as equals.
- The design of corridors with features stimulating interactions, was seen as an important factor impacting the development of sense of community.
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- Joint use" spaces, characterised by balanced domination instead adult control seem to have a positive effect on creating sense of community
- The design features must be skilful interpretations of ideas, wishes and beliefs of school members, in order to contribute to sense of a place.

# B2 Exhibition entrance

## Researching the issues

**National Educational goals**

- to develop the abilities to find, analyze, utilize and communicate information
- different types of cooperation with the local community and the broader social environment
- to form opinions, convictions and a value system, developing personal and national identity, creating the awareness and sense of belonging to the Republic of Serbia, respecting and fostering the Serbian language and one's language, the tradition and culture of the Serbian people, the tradition and culture of ethnic minorities and communities, other people, developing multiculturalism, and respecting and preserving national and world heritage
- develop communication and dialogue skills, the sense of solidarity, quality and efficient cooperation with others, fostering friendship and camaraderie
- to develop and respect racial, national, cultural, language, religious, gender and age equality, tolerance, and respect for differences
- foster aesthetic perception
- efficient cooperation with families by involving parents or guardians

**Local Sustainable Development Strategy**

- raising the technical and organisational capacity of schools
- development of new educational concepts
- development of new concepts, operation and promotion of culture and arts
- construction and reconstruction of cultural centers
- raising the technical and organizational capacities bodies responsible for the protection and promotion of cultural heritage
- procurement of modern audio-visual equipment for the cultural centres

- SAFETY & SECURITY
- HEALTH
- PHYSICAL ACTIVITY
- FOOD
- SENSE OF COMMUNITY
- PARTICIPATION
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- CULTURAL DIVERSITY
- SENSE OF A PLACE
- EDUCATION
- SCHOOL GROUNDS
- CONSTRUCTION & MATERIALS
- LIGHT
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- WATER
- WASTE & RECYCLING
- TRANSPORT
- ENERGY
- NEW TECHNOLOGIES
- COST-EFFECTIVENESS
- MAINTENANCE & OPERATION
- FLEXIBILITY & ADAPTABILITY

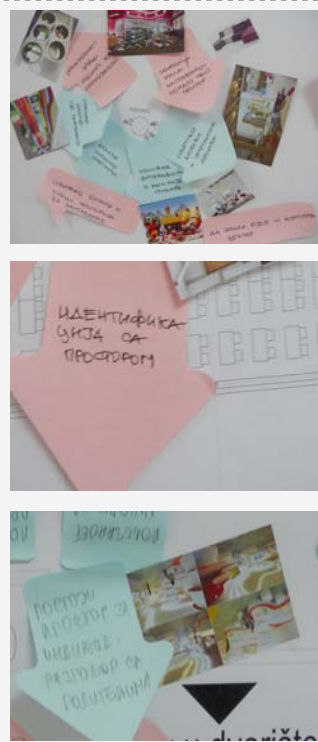
**MACRO location challenges**



all public cultural amenities are in the city centre

**TEACHERS' comments**

- Sometimes the hostility on ethnical basis between pupils could be observed
- School must be an important cultural centre in Stara Pazova
- Collaboration with local professionals, experts and artists
- A plan must be devised how the school could be better connected with the local community
- A space for presentations is needed
- Space must transparently show what kind of community we are



**MICRO location challenges**



small and functionally not well integrated exhibition space




the entrance is not communicating well the school ideas and values

**PUPILS' comments**

Model no.1  
Hocus, Pocus, Preparandus!  
- Exhibition space

- The school space does not represent who we are
- Our work in the school is not exhibited enough
- Our collaborations with local artists and neighbours are never shown





# B2 Exhibition entrance

Developing the ideas

Who we are and what we stand for

Could the school become new cultural centre in the neighbourhood able to act as local stabilizer?



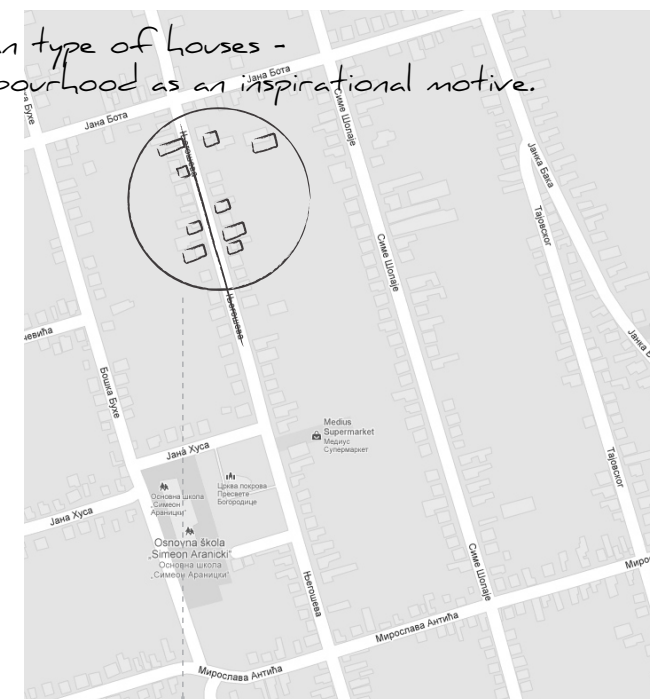
Entrance as an exhibition hall?  
How can pupils organise presentations of rich collection of artefacts to the local community members?



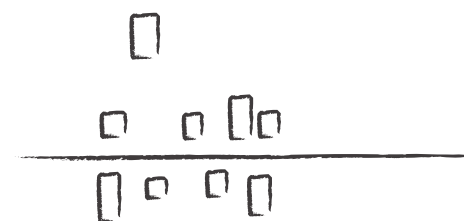
Could specially designed spaces increase occupants identifications with the space?

Is this space flexible enough to accommodate learning activities with the local community members?

Elongated plots with the Panonian type of houses - Urban morphology of the neighbourhood as an inspirational motive.



Transposing the urban morphology of the neighbourhood onto the exhibition wall



socialising



learning

### Pedagogical impact of space - Key messages from the analysis:

- Position of the school within the community and the joint use of the facilities by school and local neighbourhood members fosters the development of sense of community.
- The design of corridors with features stimulating interactions, is an important factor impacting the development of sense of community.
- Well structured activities around thoughtfully designed space, impacts the bonding of the teachers, pupils, neighbours and knowledge exchange.
- In order to promote cultural diversity school design has to take into account occupants cultural and national features. What is more it has to allow everyone to apply their skills and knowledge, through participatory design, and create and recreate a new history of the school.
- The design and the size of the entrances and reception areas is crucial for communicating sense of a space.
- The design features must be skilful interpretations of ideas, wishes and beliefs of school members, in order to contribute to sense of a place.
- Places have to be able to grow and be developed over time according to the occupants' needs and wishes so as to allow or even invite personalization
- When school design allows the local community to participate, when the design arises from local challenges and is representative of their communal situation, it can contribute to the identity and sense of a place within the whole community.
- Flexible and adaptable spaces across the school enables pupils to learn according to their own pace, socialise with their peers and teachers.

# C1 Roof garden

## Researching the issues

**National Educational goals**


- to develop the abilities to find, analyze, utilize and communicate information, while skillfully and effectively using information and communication technologies;
- develop communication and dialogue skills, the sense of solidarity, quality and efficient cooperation with others, fostering friendship and camaraderie
- child- and pupil- oriented education through different forms of teaching and learning, develop motivation for learning
- to create awareness about the importance of sustainable development, protection and preservation of nature and the environment, ecological ethics, and animal protection
- openness to teaching innovations

**Local Sustainable Development Strategy**

- creating new green areas
- development of new educational concepts
- education about ecological challenges
- affirmation of renewable energy sources
- improvement of ecosystem
- creation and development of eco corners within all schools
- education programs for children and young people as a way of preventing social problems
- improving the energy-efficiency


- SAFETY& SECURITY
- HEALTH
- PHYSICAL ACTIVITY
- FOOD
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- FLEXIBILITY & ADAPTIBILITY

**MACRO location challenges**



the library in the town centre is the only space that can be used for learning after school, lack of after school clubs

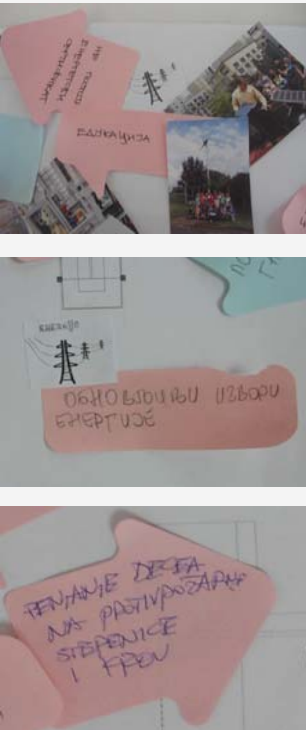
**MICRO location challenges**



unused roof space

**TEACHERS' comments**

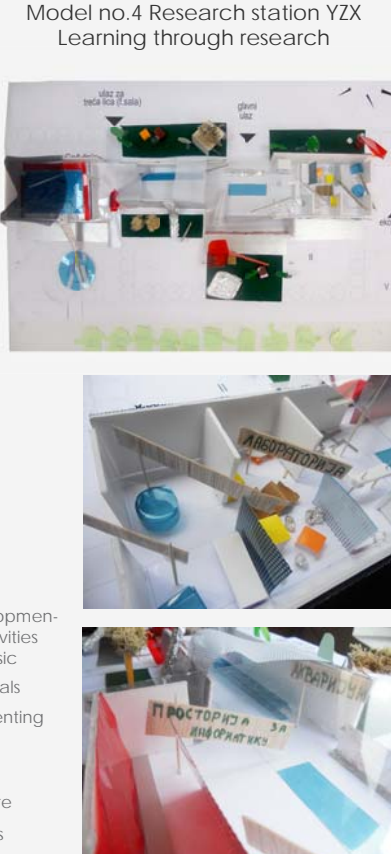
- Spaces for stimulating play and learning
- Education about ecological issues and alternative energy sources
- Eco character supported through space design
- Climbing on the unprotected roof is a safety issue
- Including some alternative energy sources
- Monitoring of energy consumption
- A lot of unused space pockets across the school



**PUPILS' comments**

- Lack of spaces for learning and playing during the free time
- Learning about renewable energy sources only from books in classrooms
- We would like to use high-tech equipment for learning
- We would like to do research alone and the present what we discovered to the group

**Model no.4 Research station YZX Learning through research**



**Activity Preferences:**

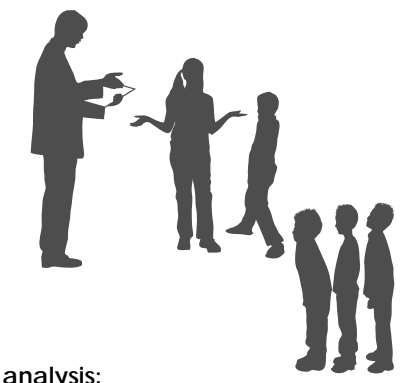
- 23,07% Learning by experimenting
- 23,07% Interaction with nature
- 15,38% High-Tech learning
- 15,38% Interaction with peers
- 7,69% Physically and developmentally challenging activities
- 7,69% Learning through music
- 7,69% Interaction with animals

# C1 Roof garden

Developing the ideas

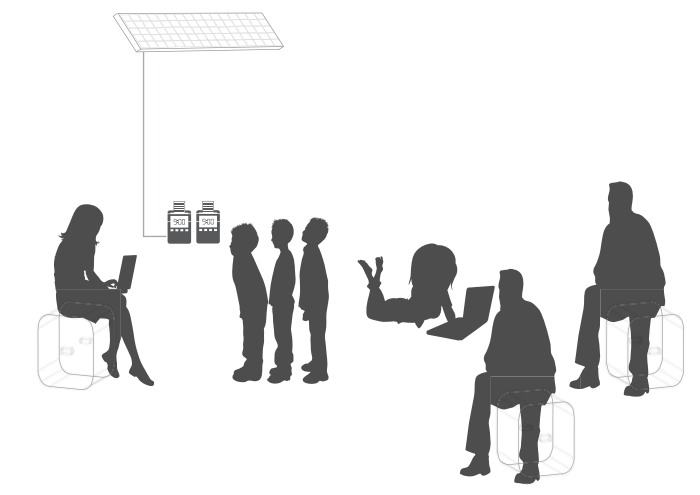
How should the unused space pockets around the school be remodeled into effective learning spaces?

Research station YZX - Learning about alternative energy sources



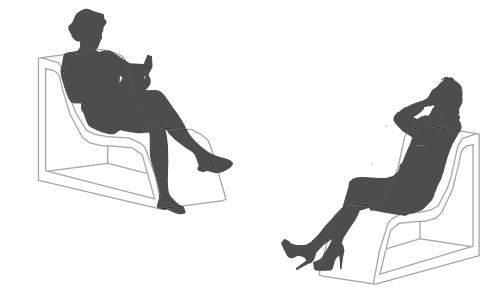
**Pedagogical impact of space - Key messages from the analysis:**

- "Joint use" spaces, characterised by power balanced instead adult control seem to have a positive effect on creating sense of community.



**Pedagogical impact of space - Key messages from the analysis:**

- Enough flexible and adaptable spaces across the school enables pupils to learn according to their own pace, socialise with their peers and teachers, and minimizes the conflicts between the two groups.



**Pedagogical impact of space - Key messages from the analysis:**

- The size of spaces and the opportunity for the levels of privacy to be regulated, were also factors determining how successfully a certain space impacted the development of a sense of community.