

A photograph showing several hands of different skin tones working together to plant a small green sapling into a hole in the ground. The soil is dark brown and appears to be in a field. One child is wearing a red sweater and a red and white checkered shirt. The text 'CHILDREN AS DESIGNERS' is overlaid in white, bold, uppercase letters. Below it, the subtitle 'Participatory Design with Siaya's Young Learners' is also in white, uppercase letters but smaller and not bold.

CHILDREN AS DESIGNERS

Participatory Design with Siaya's Young Learners

ACKNOWLEDGEMENT

SPECIAL THANKS TO

All the participating children at Awelo Primary School and Karapul Primary School

Our tutor and support in Kenya, Joshua Wanga

Our helpful and dependable driver, Eric

Our supporting teacher at Awelo, Benta

Thank you for the financial support that enabled us to conduct all the workshops, create the prototype, and enjoy fika with the children

Abdullah Saleh
Anders Wennberg
Andreas Grüşchow
Ann Rickardsson
Cecilia Wennberg
Daniella Jacqueline Hörslykke
David Ålidhem
Dennis Parkan
Elisabeth Andersson
Joanna Nyberg
Johanna Wennberg
Lovisa Runeson
Melinda Carlsson
Oliver Wallin
Pontus Erickson
Per Gustafsson
Pia Spjut
Tomas Lindahl
Åsa Lundgren

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INTRODUCTION

Project introduction

This project involves a team from Chalmers University participating in the Master's program Architecture and planning beyond sustainability, working in close collaboration with children in Siaya County, Kenya and especially kids from Awelo Primary School located in Siaya.

The collaboration began with the aim to involve and engage children more actively in design processes. Children are a vulnerable group often excluded from these kinds of activities, as well as from many decision making processes in society. Kenya and Siaya have worked with the issue of inclusion of vulnerable groups through an ongoing development plan, where our project covers the topic through the perspective of a child.



As a result, this report proposes two parallel outcomes: one methodological representation on how to include children in design processes, and a specific design solution for improvement of schools in Siaya County. The design further suggests site-specific improvement of Awelo primary school in the three scales of a masterplan, a building and a prototype detail.



The master plan covers a broader perspective on development of schoolyards in Kenya, taking into account the problems identified by the children during our problem-finding workshops. The building scale addresses the lack of adequate facilities and is based on the changed Kenyan school system that from 2024 extends primary school from grade eight to grade nine. As a result, there are currently no classrooms for grade nine at Awelo Primary School. Therefore, the team suggests constructing a new building and improving the existing structures at Awelo Primary School. For the improvement of the old structures, we have built a prototype with the children to address the major problems of heat and noise in the classrooms. In this prototype, we are working with local and affordable materials, as we want the community to continue building these frames and improving the classroom environment. For the future, we have also discussed the possibility of incorporating the prototyping into the children's arts and crafts lessons with the teachers of Awelo Primary.



Team



ANJULI



MOA



ASTRID



LOVISA



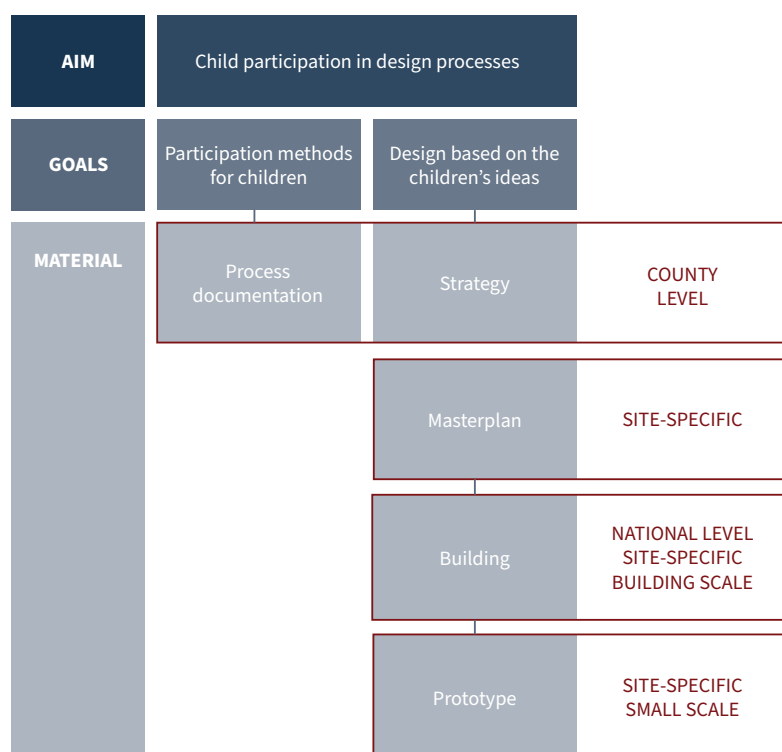
LINNÉA

AIM

Outcome and goals

The structure of this project is a bit complex, working with two parallel goals and in different scales. To get a better understanding of how we have worked we visualised the project structure in the figure.

So the overall aim is about involving children in design processes. Then we have worked parallel with the two goals mentioned. One goal is about trying out and documenting different participation methods for integrating children in design choices. The other goal is about making a design based on the collaboration with the children of Awelo Primary School. The figure also visualises what types of material we want to produce, to communicate our two goals.



Focus areas and guidelines

This project is part of an ongoing work with community participation methods, driven by Joshua O. Wanga, professor at Jooost University in Siaya County and Siaya County. Despite being very free in how we wanted to structure and plan our project, we were given some focus areas and guidelines that were supposed to help us frame the project:

- Children's wishes and concerns
- County and municipal goals
- Climate change & urban resilience (connected to UN framework and SDG's)

These are described further in the background.

Methodology

The planned design workshops utilise insights from Architects Without Borders within the domain of participatory design. With a focus on inclusivity, the methodological theories of Architects Without Borders consider a diverse range of stakeholders and provide methods to integrate the viewpoints of children. The methodologies that have been chosen and used within our project ensure that children are taken into account across all stages of the design process. The five workshops are based on the following methodologies: Exploring your Neighbourhood, Drawing Workshop, Dreaming Through Drawing, Directed Storytelling, Collage, and Creative Toolkits

BACKGROUND

Frugal design

frugal

adjective

/ˈfruːgəl/

”careful not to spend too much money” (*Cambridge Dictionary, 2024*)

Water hyacinths as building material

Situated not far from Siaya County is Lake Victoria, the world’s second-largest freshwater body. With Kenya controlling 6 percent of its total area, the lake supports local fishing, supplies of drinking water and transportation, all of which depend on a healthy biodiversity. However, in bays such as Kisumu, Kendu, Nyakach, Home, and Asembo, the growth of water hyacinths has invaded the banks. In Kisumu, invasive hyacinths covered 1.000 hectares of the total surface already in 1998. When these hyacinths clog waterways, they not only disrupt the environment by invading ecosystems but also contribute to social and health issues. The invasive species disturb fishing opportunities and breed malaria-carrying mosquitoes and other disease-spreading insects. Moreover, the local economy suffers when economic activities are hindered by masses of hyacinths blocking the port and fishing grounds. These species disrupt life ecologically, socially, and economically, posing significant challenges from the perspective of sustainable living. (Mailu. 2001)



To address the sustainable issues of the invasive species, research has been conducted on whether the hyacinths may be used as building materials within construction and architectural practices. Recent studies by Mohamad Sjamanto (2002) the fibres of the hyacinths have been proved to work as a material that deals with absorption of sound. Similarly, several other studies covered by Justus Ouma (2023), Mara Olivares -Marín(2023) and Erni Setyowati (2021) have reached equal conclusions demonstrating that hyacinths perform well in terms of both thermal issues and acoustic absorption.

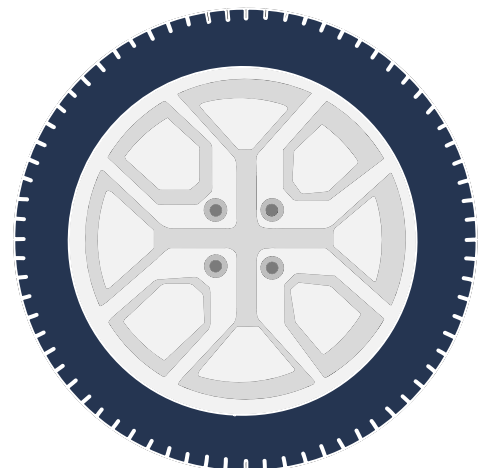
As an exploration, the Reality Studio team and the children of Awelo Primary School have tried to work with a combination of water hyacinths and reused car tires to suggest economically and environmentally sustainable design.

Rubber as building material

In Kenya we came across old car tires many times. They were lying around next to the streets, children were playing with them and small hardware shops were selling them cut into ropes.

Old car tires can be highly effective in absorbing sound waves and reducing noise levels within a building. Studies have shown that materials with high density and flexibility, such as tire rubber, are particularly good at damping sound, which makes them suitable for acoustic applications (Acoustical Surfaces, 2024).

Using old tires for acoustic applications also offers significant environmental benefits. It reduces the number of tires that end up in landfills, promoting recycling and sustainable building practices. Each year, millions of tires are discarded, creating environmental hazards. Repurposing these tires for building acoustics helps mitigate this issue while providing cost-effective and efficient soundproofing solutions (Tire Derived Products Directory, 2024).

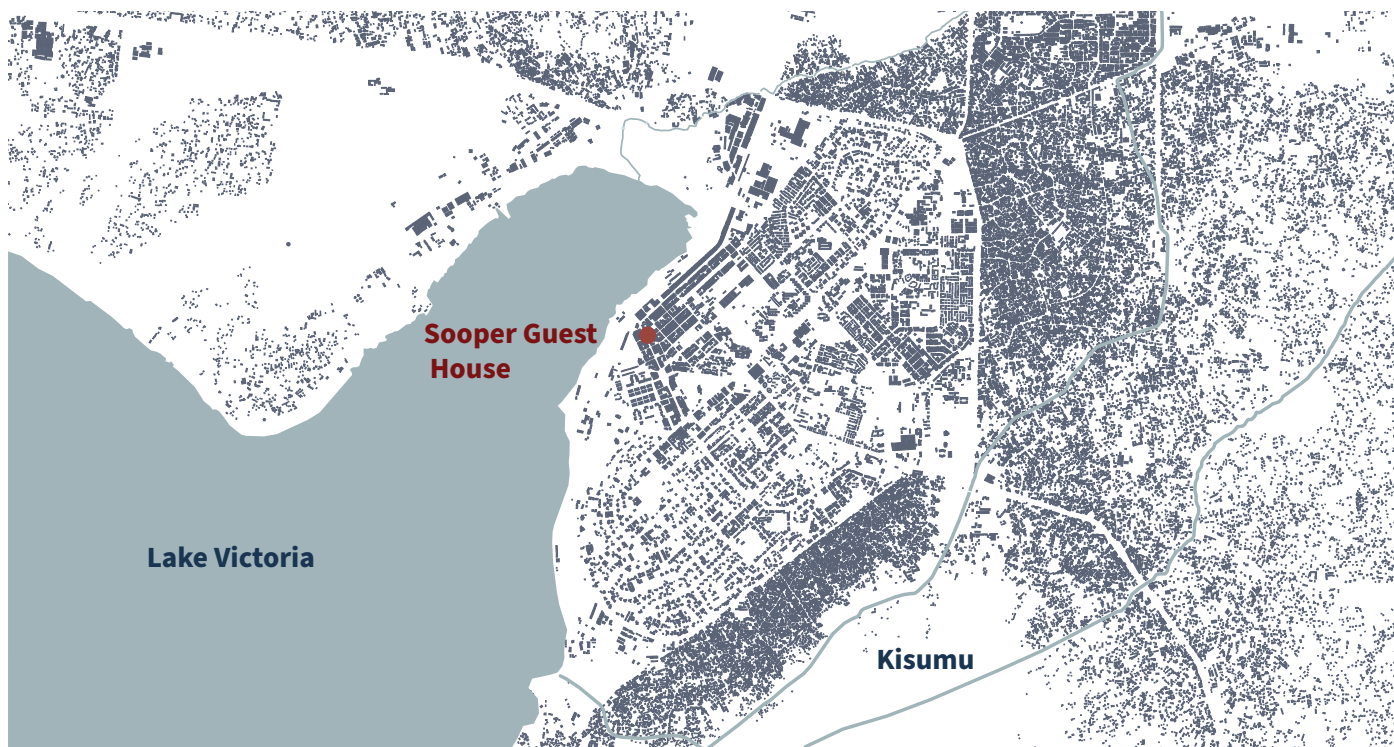


Context

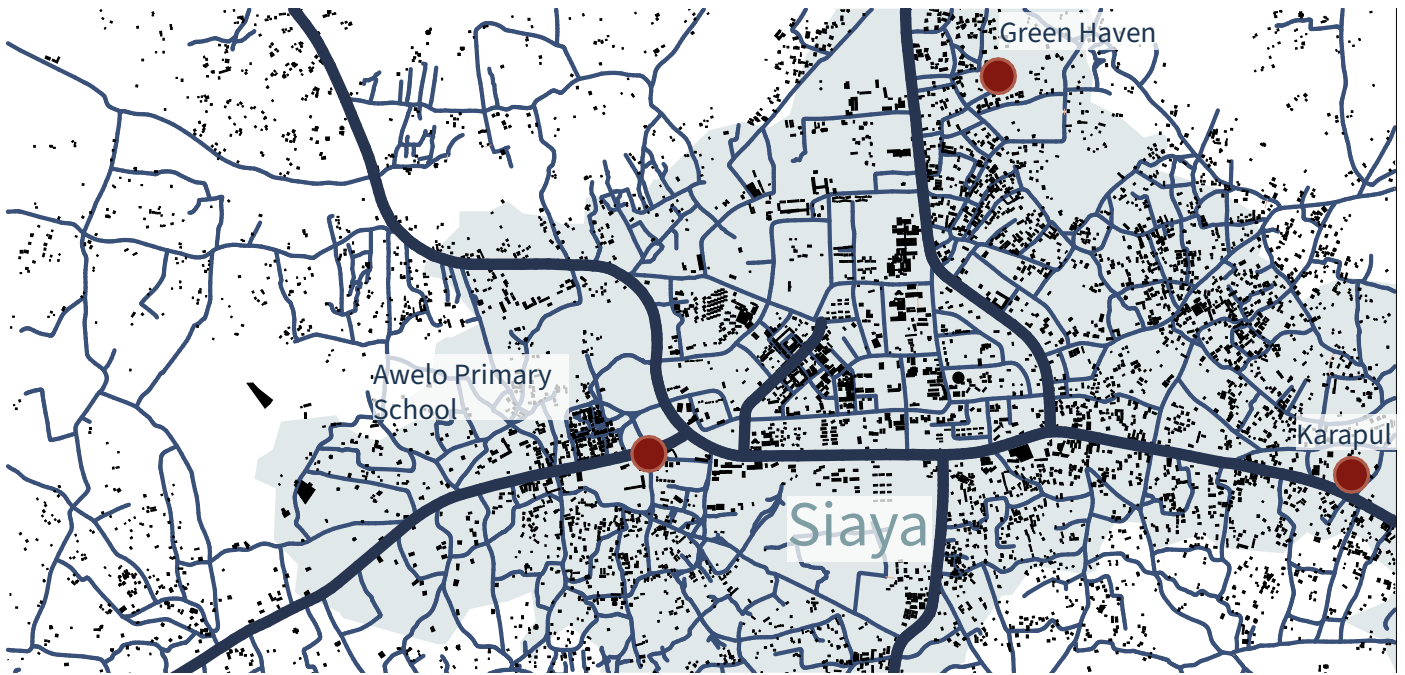


Kenya is located in East Africa. It is bordered between Somalia, Ethiopia, South Sudan, Uganda, Tanzania and the Indian Ocean. Kenya is one of the three countries that share Lake Victoria. The three largest cities are Nairobi, Mombasa and Kisumu. Nairobi is the capital and largest city of Kenya. It serves as the economic, political, and cultural hub of the country. Mombasa is a major coastal city known for its port, tourism, and historical significance. Kisumu is located on the shores of Lake Victoria and is an important city in western Kenya. It serves as a major commercial and trade hub for the Lake Victoria basin, with a focus on agriculture, trade, and industry (CIA World Factbook, n.d.).

Kenya has a total population of 58,246,378 (KNBS, n.d.). Kenya is linguistically diverse, recognizing Swahili and English as official languages, with Swahili as the national language. Additionally, over 60 indigenous languages thrive, reflecting Kenya's rich cultural heritage (CIA World Factbook, n.d.).



Kisumu is located on the northeastern shore of Lake Victoria and serves as a vital transportation hub for goods, supporting a significant fishing industry. However, increasing pollution, the invasion of water hyacinths, and overfishing are diminishing its potential economic benefits. Kisumu has a population estimated at 406,684 (2024) and growing (World Population Review, n.d.). Many of the old Reality Studio Projects are located in Kisumu and provided input and inspiration for the current Project.



Siaya, located in the western part of Kenya, is the capital of Siaya County. The city holds historical and cultural significance, serving as a centre for the Luo community, one of Kenya's largest ethnic groups. The primary economic activities in Siaya are agriculture and livestock farming. As the administrative centre of Siaya County, the city also benefits economically from the presence of government offices and educational institutions, which provide employment and drive local commerce (Siaya County Government, n.d.).

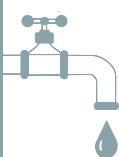
There are three important locations within the Reality Studio project: Awelo Primary School, a school situated in the western part of Siaya city and the main part of the project; Karapul Primary School, a school that served as a comparison, located in the eastern part of the city; and the accommodation Green Haven in the north.



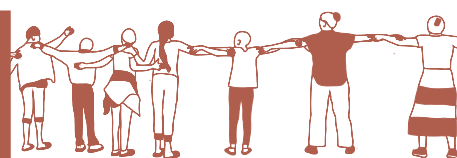
Awelo Primary School is a public educational institution located in Siaya Township, Karemo, Kenya. The school is managed and sponsored by the central government and the District Education Board (DEB). It provides the Kenya Certificate of Primary Education (KCPE), administered by the Kenya National Examination Council (KNEC) under the Ministry of Education. The school consists of 20 classrooms with a ratio of 74.7 children per classroom (Primary School Kenya, n.d.).

Implementing the UN SDG'S

Below, we have identified Sustainable Development Goals (SDGs) relevant to our project. These goals emphasise how the school model we developed will promote good health, create conducive educational environments, strengthen international relationships, and foster knowledge sharing for a more equitable global future



The development of the new school model incorporates rainwater harvesting to ensure that potable water could be used solely for drinking, while harvested rainwater is used for cleaning and washing hands.



Assisting other contexts in their development through collaborations, ideas and time, fostering enduring relationships along the way



The model addresses hygiene by providing improved cleaning opportunities, as well as incorporating more green areas and paved walking paths to reduce dust and mud.

The new model features classrooms with reduced noise levels due to improved roof materials, better ventilation, and more space per child, enhancing the learning environment.



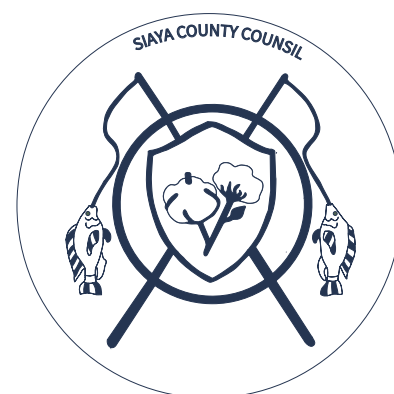
Siaya County physical and land use development plan 2023-2033

The Siaya County Physical and Land Use Development Plan aims to address several issues. One key issue is ensuring that all people in Siaya have access to essential services, such as schools. The plan emphasises that schools should be safe, healthy, and provide good educational opportunities.

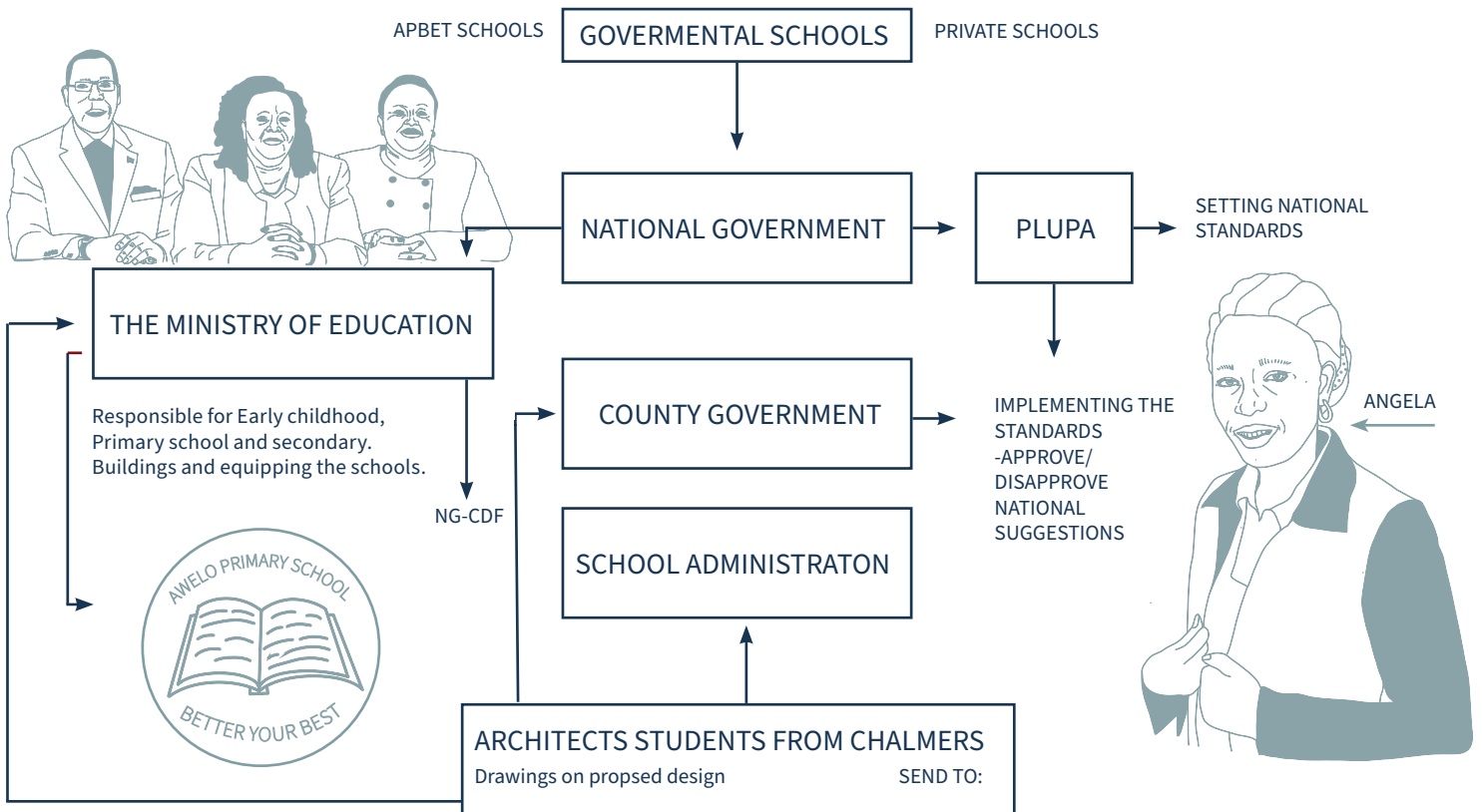
Additionally, the plan focuses on inclusivity, drawing insights from the "Children and Youth Resilience Action Plan Nairobi." This plan was co-created by children, youth, and adults from various sectors and stakeholders. It outlines strategies for building resilient and child-friendly societies, emphasising the importance of:

- Building social cohesion among diverse communities.
- Promoting the inclusion of marginalised and vulnerable groups.

Children are recognized as a vulnerable group often left out in society, and the plan addresses how to include and support them effectively.



The system of decision making in Kenya



Kenya has three different types of schools: APBET, private and governmental. APBET schools are low-cost private schools that are free for children to attend and are generally found in areas with lower standards. Ordinary private schools charge fees, and Government schools are free of charge. The schools Awelo Primary School and Karapul Secondary School are both run under the Governmental school system.

To work effectively with Awelo Primary School, it was essential for us to understand the governance structure in Kenya and identify who makes decisions. There are two governance structures: the national government and the county government. The Physical and Land Use Planning Act (PLUPA) sets out planning standards for Kenya and is governed at both the national and county levels. The national level is responsible for establishing standards for physical and land use planning across the country. In contrast, the county governments are responsible for implementing these standards and adapting them to their specific counties.

In a conversation with our contact at the county council in Siaya, Angela, we learned more about how the school system works and how decisions are made, including where to apply for funding if you want to construct something for Awelo. Awelo Primary School offers primary education, and the Ministry of Education in Kenya is responsible for equipping and building schools for basic education, including early childhood, primary, and secondary schools. Therefore, the Ministry of Education has the responsibility and mandate to construct new structures at Awelo.

The Ministry of Education also applies for and secures funding, which is done through the National Government Constituencies Development Fund (NG-CDF). Once the funding is secured, they engage a contractor for the construction. Before construction starts, the county government needs to review and approve the proposed drawings to ensure they meet the required standards.

In order to implement new design ideas at Awelo Primary School, we need to send our drawings to both the school administration at Awelo and the Ministry of Education, which is part of the national government, for approval. If they approve our design, they can apply for funding from the National Government Constituencies Development Fund (NG-CDF). Finally, if funding is secured, the drawings will be sent to the county council for final approval.

STAKEHOLDERS

Stakeholder analysis

The figure demonstrates relevant stakeholders within the process at Awelo, where the inner circle represents the internal stakeholders, and the outer circle represents the external ones.

Children / Learners

40 children from Awelo Primary School have been participating in workshops that have been planned and executed by students from the Reality Studio. During the workshops, the children found problems and design solutions related to their school facilities

RS Students

A team of five students from Chalmers University that function as initiators, coordinators and co-designers of the project.

Teacher and Staff

As part of a walk and talk workshop, one of the head teachers presented site-specific problems related to Awelo Primary School. Two teachers were present at each of the workshops with the children. One of the teachers helped put up the prototype.

Municipality

The Municipality presented problems on a larger city scale at a meeting in their office.

In another meeting, regarding responsibility for building processes at primary schools were answered, and the workshop process was presented.

Joshua Wanga

Professor at Jooust University

Mentor and contact person. He was present at all important steps and helped where help was needed.

Zingira

Zingira Community Crafts, established by Evance Odhiambo in 2005 in Kisumu, is a community based organisation. It brings together local artisans to produce and supply items crafted from recycled and locally sourced materials. The main contact person was Apollo, a craftsman with great knowledge about frugal design.

Head of Awelo Primary School

The Head of Awelo Primary School took part at the first site visit, where visions and general concerns were briefly presented.

Parents

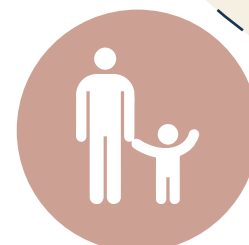
As part of the first meeting with the school children, the parents were present and raised their issues and concerns through open discussions. On the day of the final presentation, the parents listened to what their children did in the past workshops.



**Head of
Awelo Primary School**



Zingira



Parents

Karapul

Karapul is a primary school in Siaya which served as a comparative school in the project.

County Government

The county government of Siaya is responsible for providing various services to residents, including healthcare, education, water and sanitation and infrastructure development.

Ministry of Education

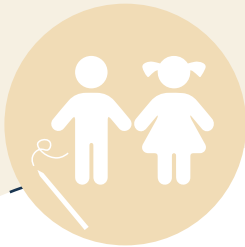
The Ministry of Education is a part of the National Government. The Ministry of Education (MOE) formulates and implements education policies, standards, curricula, and examinations. It manages primary schools, special education, secondary schools, universities, tertiary institutions, and research and higher learning centres.



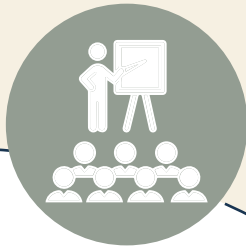
Ministry of Education
National Government



County Government



Children / Learners



Teacher and Staff



RS Students



Joshua Wanga
Professor at Jooust university



Municipality



Karapul Primary School

Awelo Primary School

Our main stakeholders are the students at Awelo Primary School in Siaya, or "learners", as the teachers call them. The school holds 1500 children, from grade pp1 to grade 8. Next year, due to a change in the national school system in Kenya, there will be a grade 9 in the school as well. Since it differs a lot in age when you start and finish school, the ages of the students in the school are approximately from age 4 to 18.

During our workshops we worked with a selection of 40 children from grade 4 to grade 8. The selection was already made for us when we came and according to the teacher who made the selection, it was made randomly, so that all kinds of children with different kinds of backgrounds were going to be represented.

Below the children from the workshops are presented. We organised them like this to keep track of what children and what ages, grades and genders we worked with.

Girls < grade 4
Vivian 7, Sharlet 4

Boys < grade 4
Wesley 7

Girls grade 4
Victoria 8, Jasmine 10, Natasha 9, Tyra 9

Boys grade 4
Nicholas 10

Girls grade 5
Scarlet 9, Wendy 10

Boys grade 5
Braxtone 11, Ferguson 11, Stanley 10, Luiz 11

Girls grade 6
Ednah 12, Gift 11, Naomi 11, Angeline 11, Joy 11

Boys grade 6
Ricoh 14, Isaac 12

Girls grade 7
Russelle 13, Lavin 13, Violet 13, Shalev 13, Rachel 13

Boys grade 7
Alex 11, Sharif 11

Girls grade 8
Lilian 13, Eunice 14, Zaina 13, Esther 13, Josphine 13,
Megline 14, Antonet 14, Eunice 13, Denzel 14

Boys grade 8
Abraham 17, Felix 18, Teddy 13, Don Moen 13, Josephine
13, Megline 14, Billy 14



Karapul as a reference school

A research for the bigger scale

Karapul Primary School is another example of a public educational institute located in Siaya township with a similar aim, structure, and size as our focus school. Karapul was a useful as a comparative school to discover problems on a larger scale rather than only site-specific problems found on Awelo Primary School. As both schools are public and are both run by the national government and the Ministry of Education, they have similar possibilities on a financial level with funding and development. The importance of making comparisons between schools is valuable to locate problems, which can be useful at a county level and in that way this project aims to be relevant for not only one school, but many in the context of the county.

Due to the restricted amount of time, we visited Karapul primary school two times and brought the similar structure of workshops as we used in the other school. The intention was to get as much information as possible and find similarities and patterns that could be relevant to the bigger perspective but also to give more children the possibility to exchange knowledge and learn about architecture and design. The different workshop occasions were planned for two Thursday afternoons where we met the children for approximately one and a half hours. Since we had less time at this location we decided to compress and adjust these opportunities to fit the purpose better and still get useful information.

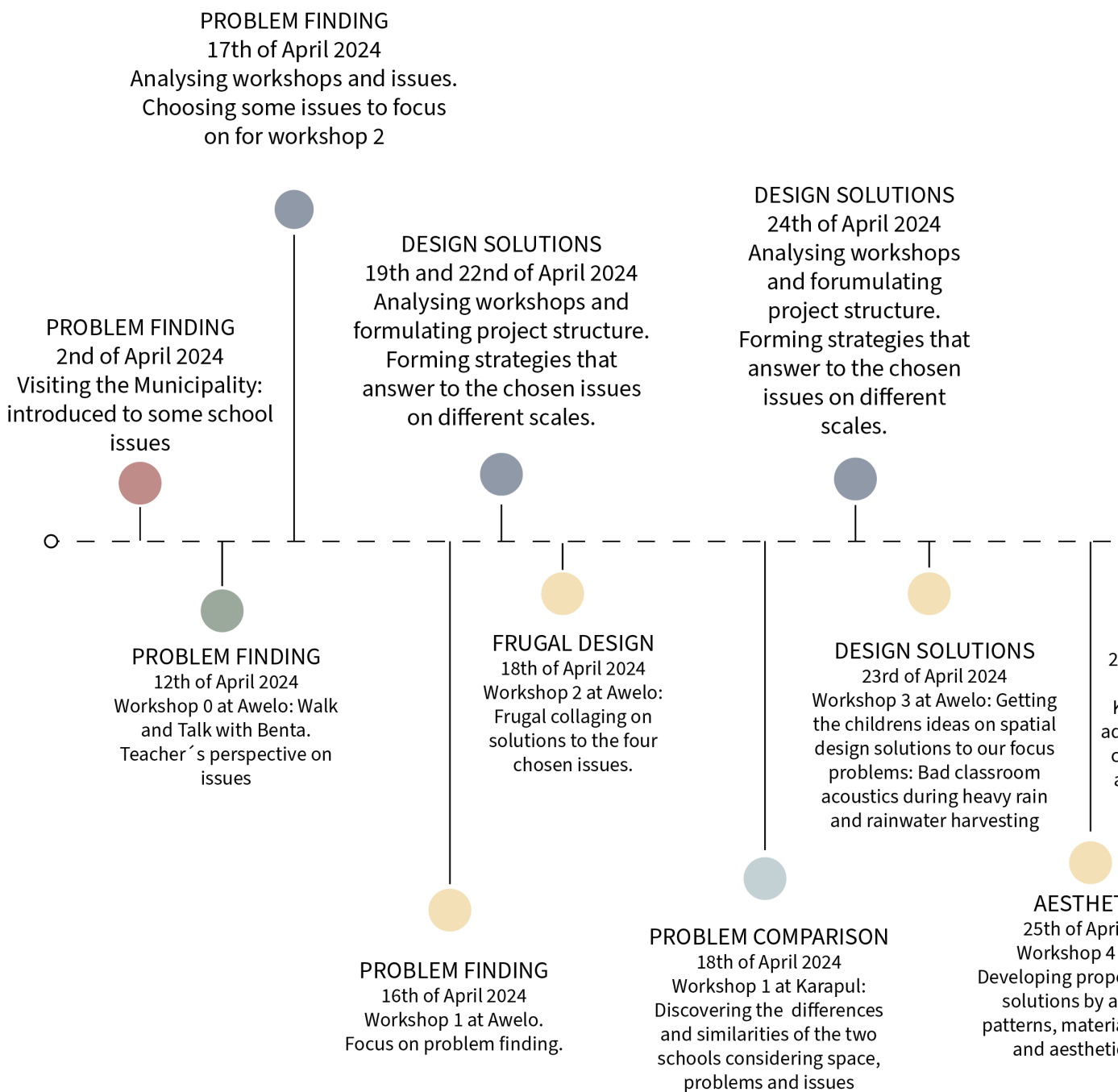
The workshops we did at Karapul Primary School were regarding the problem finding phase, to get information about possible overlaps, and the aesthetics of a child. These were the most relevant parts where we needed information to be able to use this school as a reference to the other and at the same time joyful to the children of Karapul.

As a result of this comparison, we gained more knowledge about what the site-specific problems are and what difficulties are existing on a broader level. Many problems were shown to be shared which strengthened our relevance to implement solutions on a higher level but also that the wishes of the children's aesthetics had similar character despite them attending different schools.

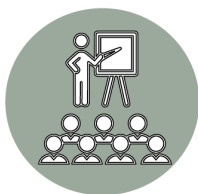


PROCESS

The project has relied on physical meetings with stakeholders, alternating between these and reflective planning sessions. To ensure participatory design with children, we conducted one workshop with a teacher and five workshops with our main stakeholders, the kids from Awelo Primary School.



RS-STUDENTS WORK



TEACHER WORKSHOPS AND INTERACTIONS



AWELO CHILDREN WORKSHOPS

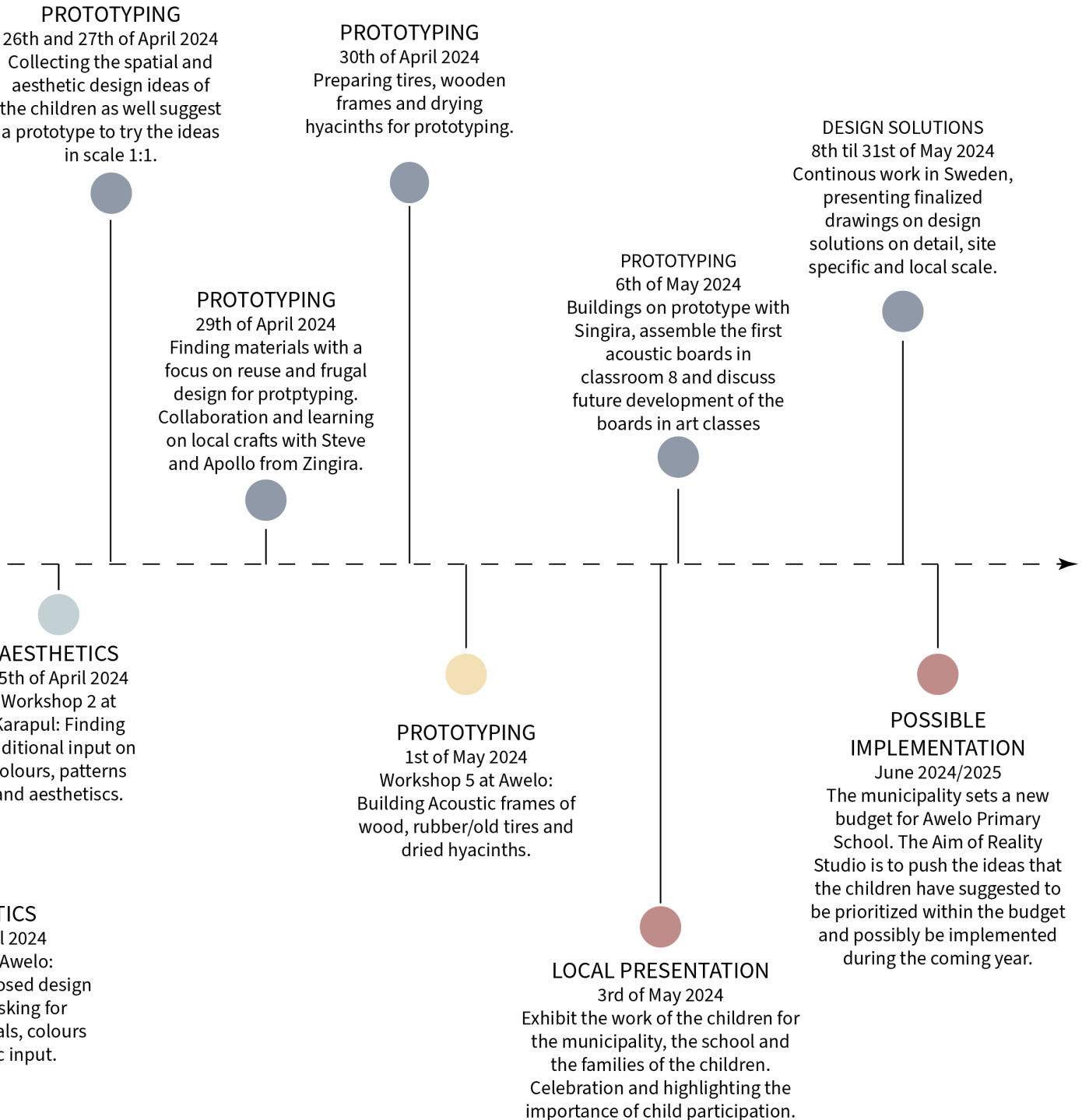


KARAPUL CHILDREN WORKSHOPS



MUNICIPALITY MEETINGS

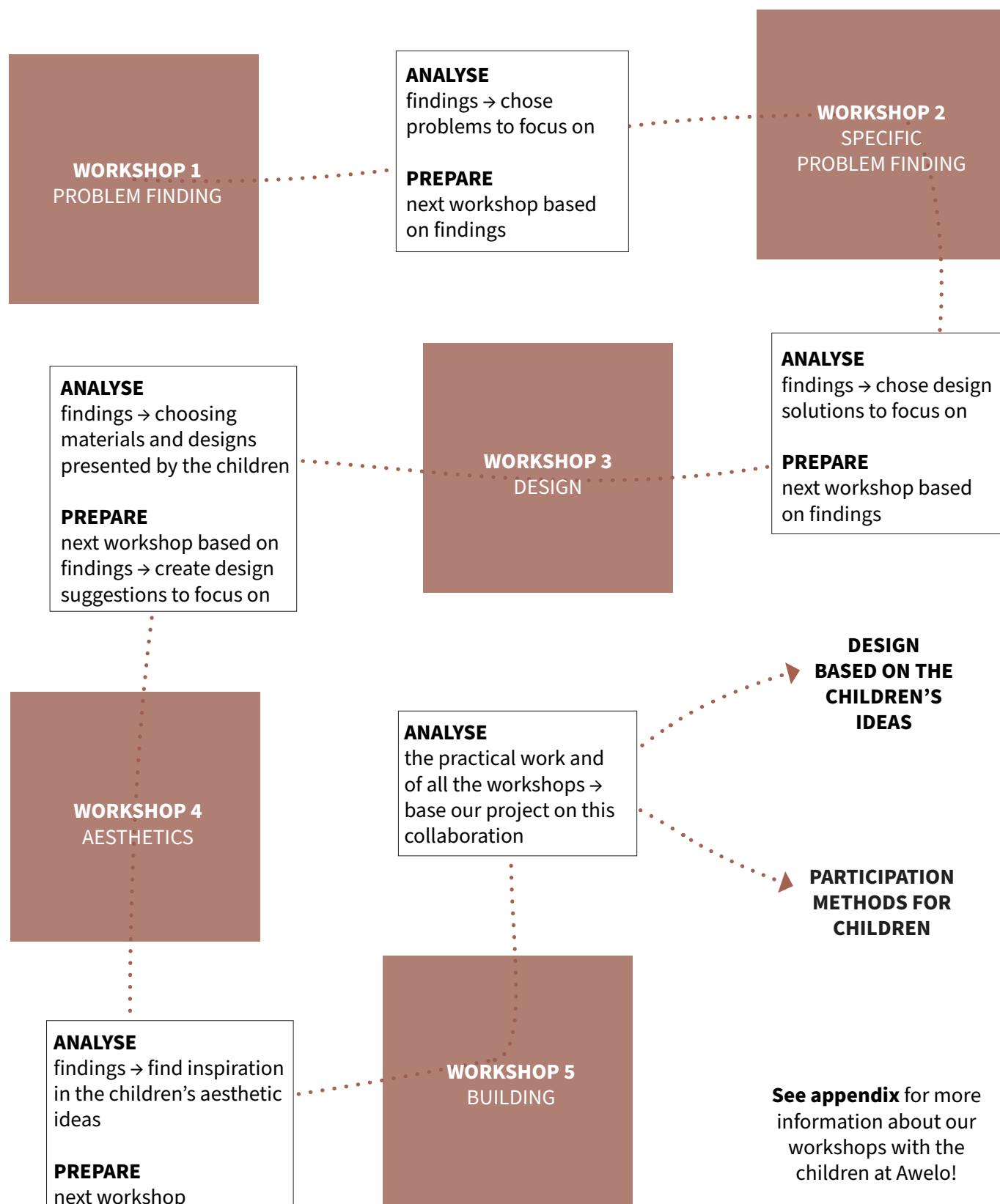
We also engaged with Karapul Secondary School for comparison, hosting two workshops, and had three meetings with the municipality to align funding and implementation decisions at the county level. Moving forward, we'll pass the project to the municipality and Awelo Primary School, allowing for improvement from different local perspectives.



Workshops at Awelo Primary School

To get out as much as possible from the collaboration with the children from Awelo, we made a clear structure for our workshops. We decided the main theme of each of them, and made sure there would be a clear "red thread" between them. Each workshop should be based on what we did in the last one, and therefore the analysis following every workshop was an important part of our process. In the following pages we shortly present what we did during the workshops at Awelo. For further information, see appendix.

When planning the workshops, we took a lot of inspiration from Architects without Borders's workshop methods.



Workshop 1

WHAT

Methods:

- Mapping exercise: map your school
- Drawing workshop: draw what you want in your school

Purpose:

- Getting information about the problems that the children see at their school.

Game:

- The opinion corner

PROBLEM FINDING

SPECIFIC PROBLEM FINDING

DESIGN

AESTHETICS

BUILDING

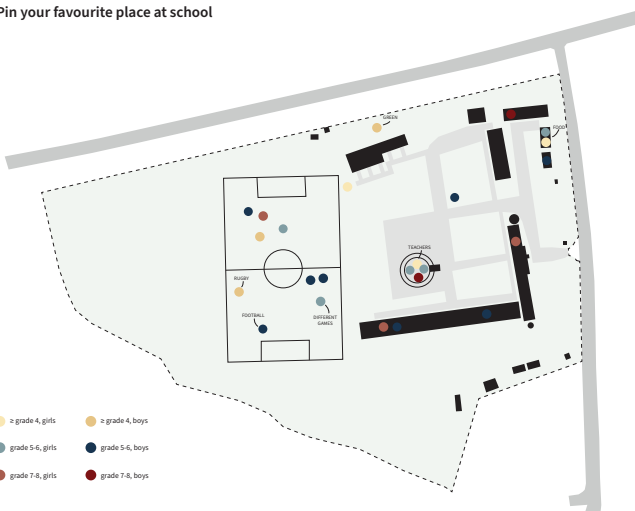
ANALYSIS

- We got more information about the spatial characteristics, qualities and issues of the school, and could choose some problems to immerse ourselves in.
- We understood more of the childrens wishes and concerns.

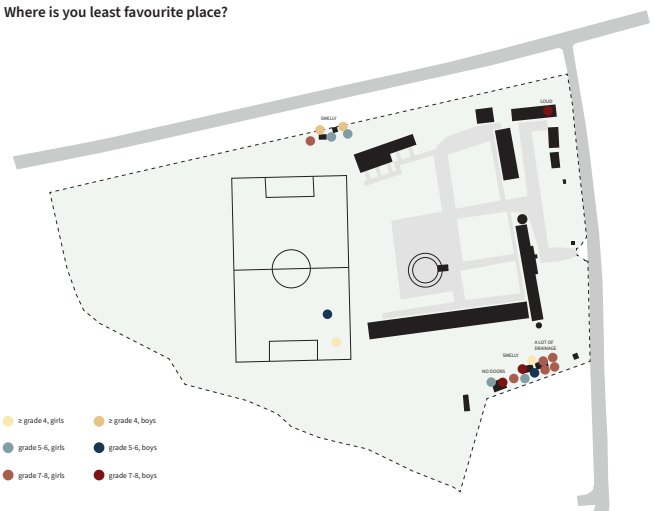
Mapping exercise: Map your school

Two of the questions asked during the exercise.

1. Pin your favourite place at school



3. Where is you least favourite place?



Dreamcloud

The children wrote what they wished they had in their school. Then followed a drawing exercise.



- Grade 4, girls
- Grade 4, boys
- Grade 5-6, girls
- Grade 5-6, boys
- Grade 7-8, girls
- Grade 7-8, boys



Workshop 2

WHAT

Method:

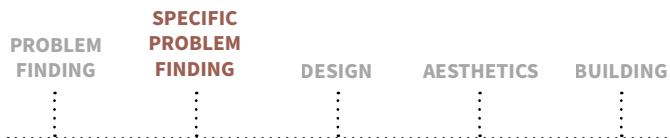
- Drawing exercise: draw you dream classroom
- Problem solving with frugal collaging

Purpose:

- Getting input from the children on the issues we found in workshop 1.
- Introduce the children to different kinds of drawings.
- Learn more about frugal design and local resources.

Game:

The knot (cooperation)

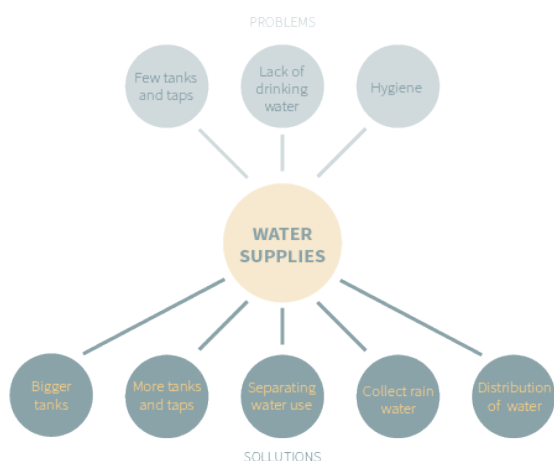
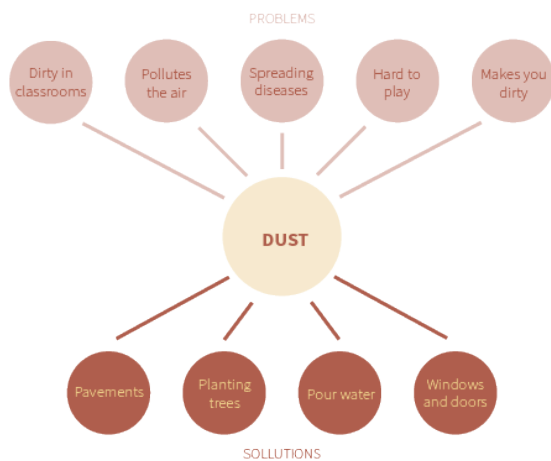
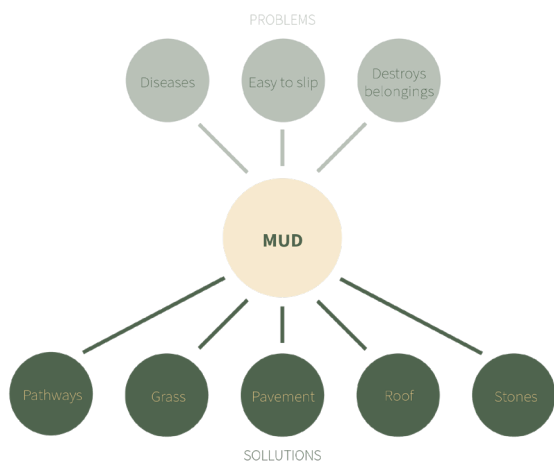


ANALYSIS

- We understood more about the four chosen topics from the children’s perspectives. They gave us information of the more specific issues they had to each topic, and presented solutions that they came up with.
- We got an idea of the children’s creativity. We got the impression that they are not used to work very freely creative and artistic, as the children in Swedish school usually do.

Problem solving with frugal collaging

The four following topics were presented to the children. We discussed specific issues and potential solutions with them. Then they did collages of the solutions.



Workshop 3

WHAT

Methods:

- Directed storytelling
- Drawing workshop: answer our questions on specific issues by making drawings

Purpose:

- Get the children to design solutions to the spatial issues we have found
- Spark the children's problem solving skills

Game:

- Tomtesmyg = 1, 2, 3 LION! (energy)
- Head and shoulders knees and toes

PROBLEM FINDING	SPECIFIC PROBLEM FINDING	DESIGN	AESTHETICS	BUILDING
⋮	⋮	⋮	⋮	⋮

ANALYSIS

- We got a lot of specific design ideas on the four chosen issues we proposed to the children. The children got very creative.
- We got a bigger understanding of how the people in the context usually work with design, materials and spatial and natural issues.

Drawing exercise: draw a solution

All children answered the questions through drawings

Where could the pipe lead?

Where could the pipe lead?

Bathhouse

Pond

Tap

Bucket

Handwashing tank

Iron

What building materials do you prefer?

Leaf

Clay

Sand

Cotton

Leather

Wood

Bricks

Concrete

Plastic

Stones

How can roof shapes collect water?

What materials can you use to decrease the sound in the classroom?

RAIN SOUND

THE SOUND WE HEAR

ABSORBING SOUND

REFLECTIVE SOUND

RAIN SOUND

ABSORBING SOUND

REFLECTIVE SOUND

The sound we hear

Mat on the floor

Mat made out of tie

Egg crate

Wood roof

Curtain

Bricks roof

Sheds on the roof

Wicker

Acoustic foam

Concrete wall

Plastic mats



Workshop 4

WHAT

Method:

- Drawing exercise: colour palette and pattern
- Drawing exercise: decorating designs - material, colours, patterns, aesthetics etc.
- Walk and talk: a day in the life of a learner at Awelo

Purpose:

- Get the children's input on design and aesthetics of the solutions we presented for them.

Game:

- Under hökens vingar kom
- Head and shoulders knees and toes

PROBLEM FINDING

SPECIFIC PROBLEM FINDING

DESIGN

AESTHETICS

BUILDING

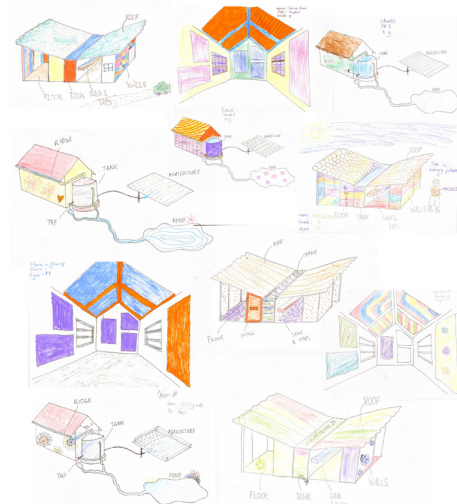
ANALYSIS

- The children once again got very creative, and we received a lot of aesthetic ideas. A lot of colour and playful patterns!
- The walk and talk exercise gave a lot of information on how the children's school days look, which have been helpful for us in the design project.

Drawing exercise: colour palette and pattern



Drawing exercise: decorating designs

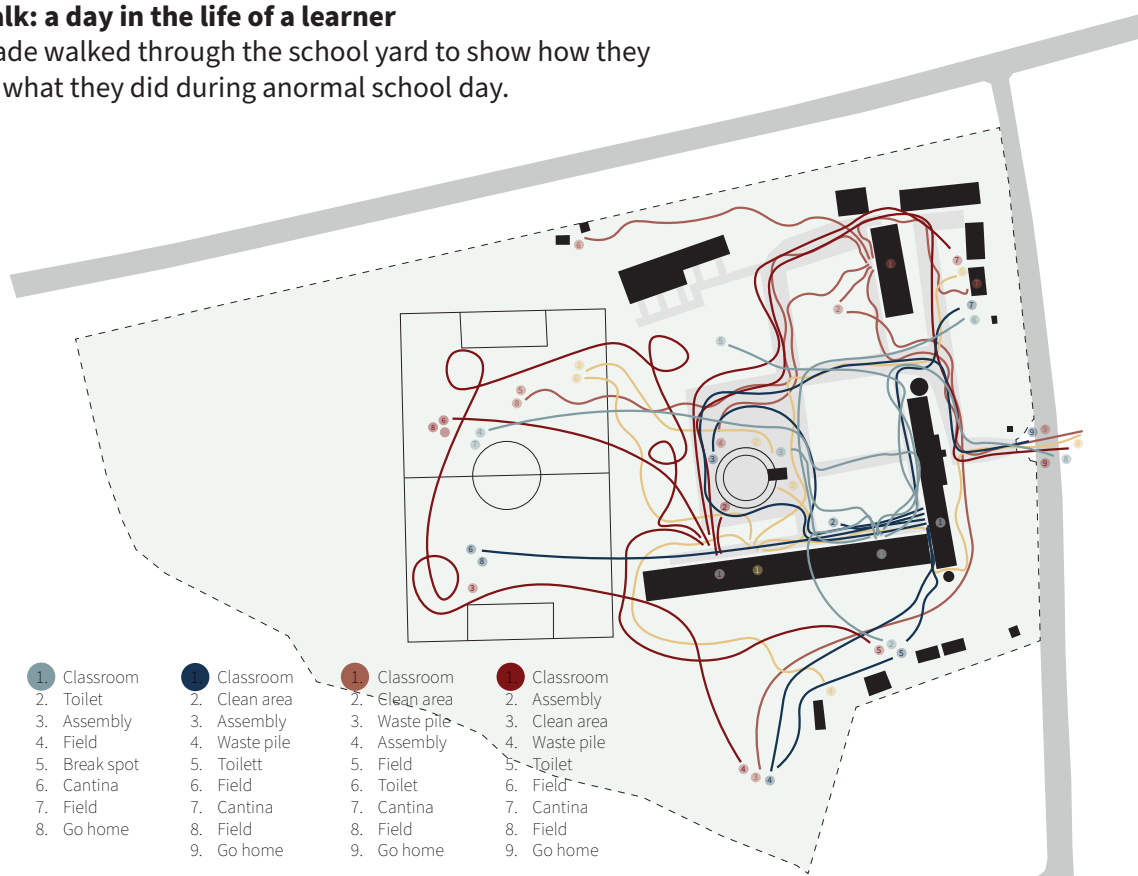


Walk and talk: a day in the life of a learner

Grade by grade walked through the school yard to show how they moved and what they did during a normal school day.

- Grade 4
- Grade 5
- Grade 6
- Grade 7
- Grade 8

- | | | | | |
|--------------|---------------|---------------|---------------|---------------|
| 1. Classroom | 1. Classroom | 1. Classroom | 1. Classroom | 1. Classroom |
| 2. Assembly | 2. Toilet | 2. Clean area | 2. Clean area | 2. Assembly |
| 3. Field | 3. Assembly | 3. Assembly | 3. Waste pile | 3. Clean area |
| 4. Toilet | 4. Field | 4. Waste pile | 4. Assembly | 4. Waste pile |
| 5. Cantina | 5. Break spot | 5. Toilett | 5. Field | 5. Toilet |
| 6. Field | 6. Cantina | 6. Field | 6. Toilet | 6. Cantina |
| 7. Assembly | 7. Field | 7. Cantina | 7. Cantina | 7. Cantina |
| 8. Go home | 8. Go home | 8. Field | 8. Field | 8. Field |
| | | 9. Go home | 9. Go home | 9. Go home |



Workshop 5

WHAT

Method:

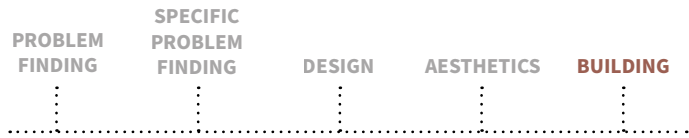
- Prototype building - acoustic boards

Purpose:

- Include the children in the building process, and also increase the possibility of them continuing the work later on.

Game:

- Dansstopp
- Under hökens vingar
- Surprise: Fiskedamm



ANALYSIS

- Building and being practical with the children worked very well! We noticed that they are used to it and were excited about it.
- A continued work with these prototypes, when we have left, is clearly possible. It can be made both in and outside of school hours.

Adding tires to the wooden frames

Wooden frames had been prepared so that the older children could weave and nail striped tires to them.



Weaving waterhyacinth

The younger children weaved dried waterhyacinth, that we later could nail on the other side of the boards.



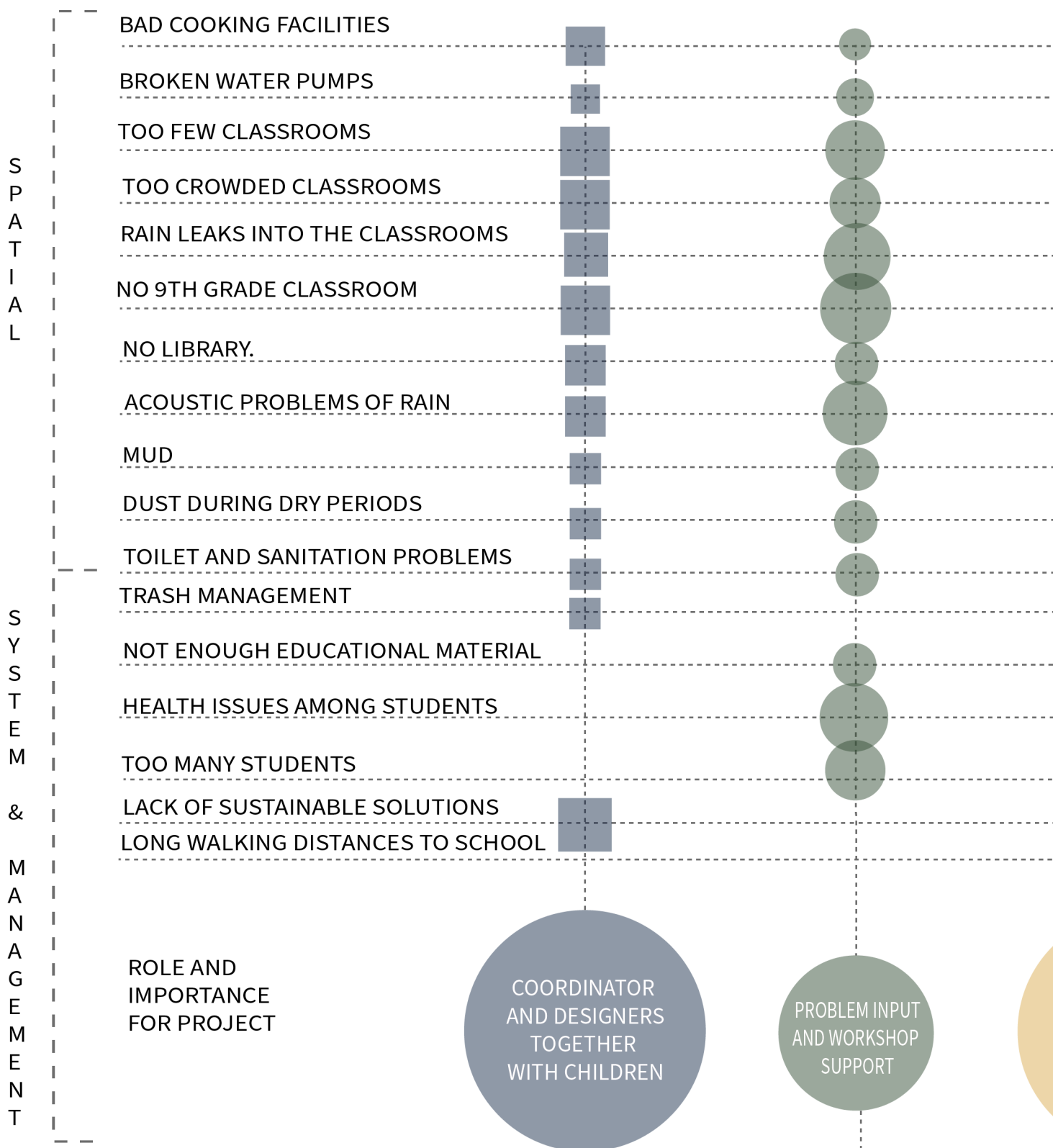
Acoustic boards

The idea of the acoustic boards is shown below. We wanted to create these boards to decrease the sound of the rain and of voices in the classrooms, and we wanted to do it with a simple and frugal design, so that they can continue the work themselves.



Two finished frames. The waterhyacinth weaving were made with help from Zingira

Problem Findings



ROLE AND IMPORTANCE FOR PROJECT

COORDINATOR AND DESIGNERS TOGETHER WITH CHILDREN

PROBLEM INPUT AND WORKSHOP SUPPORT

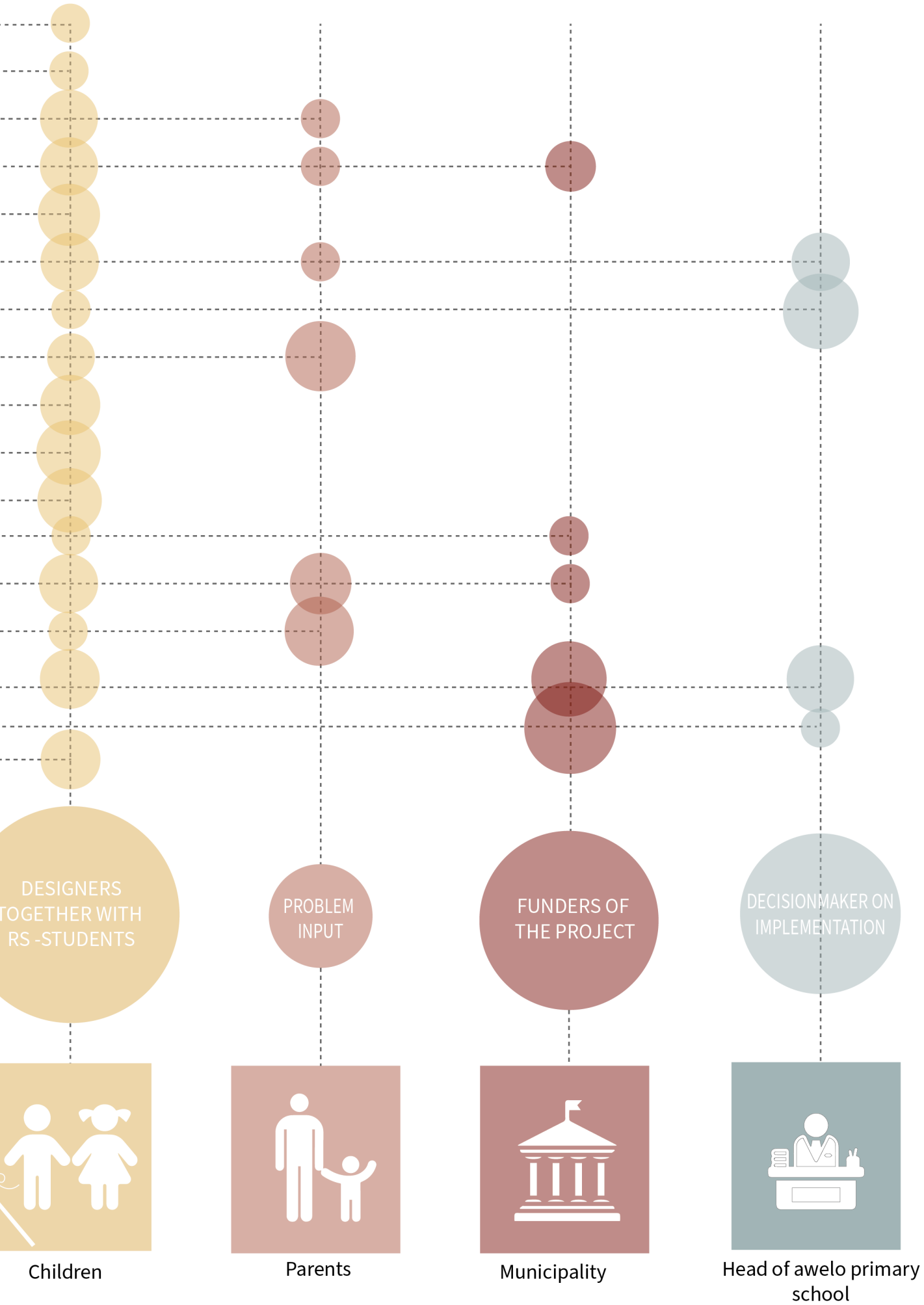
Several problems were discovered during workshops and meetings with our various stakeholders. By categorising these problems, we were able to identify common issues among the stakeholders and decide which problems to prioritise. As architecture students, we also aimed to address spatially connected problems. This approach allowed us to find our role among the local stakeholders.

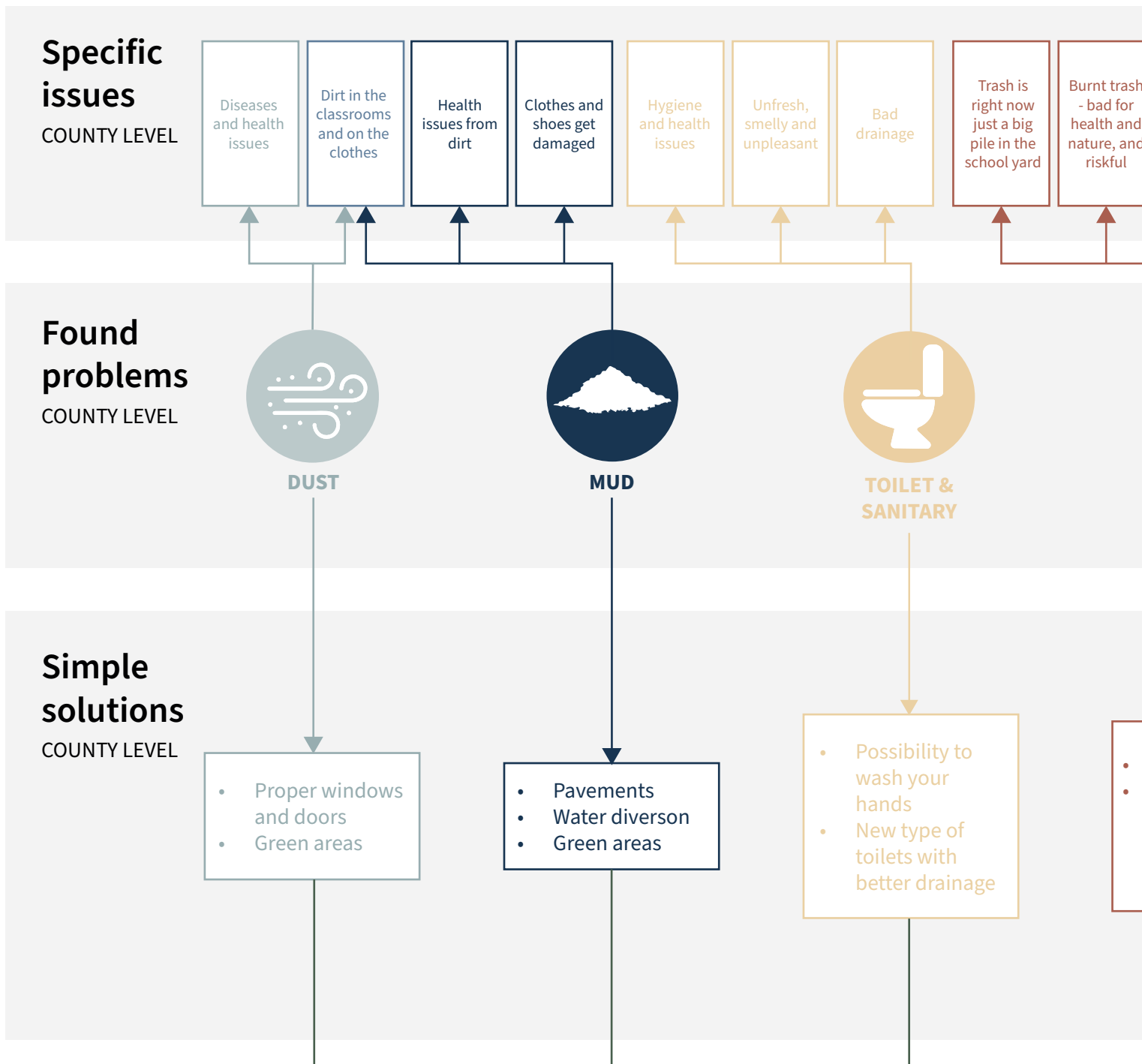


RS-Students



Teacher

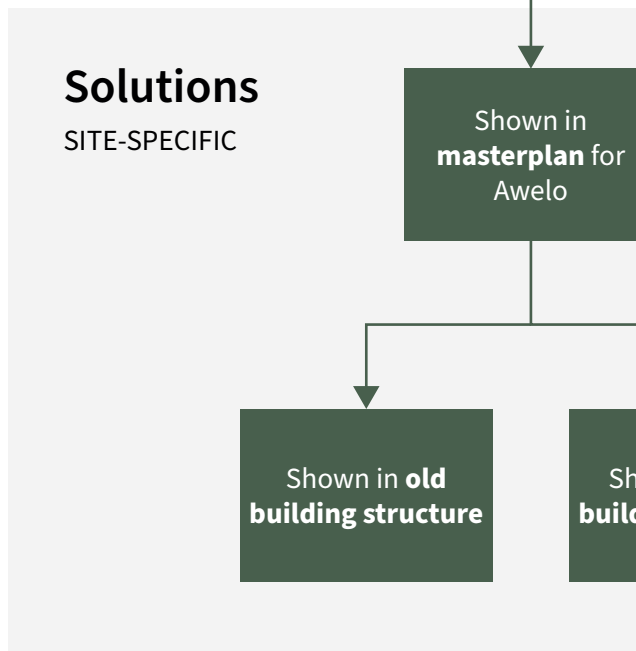


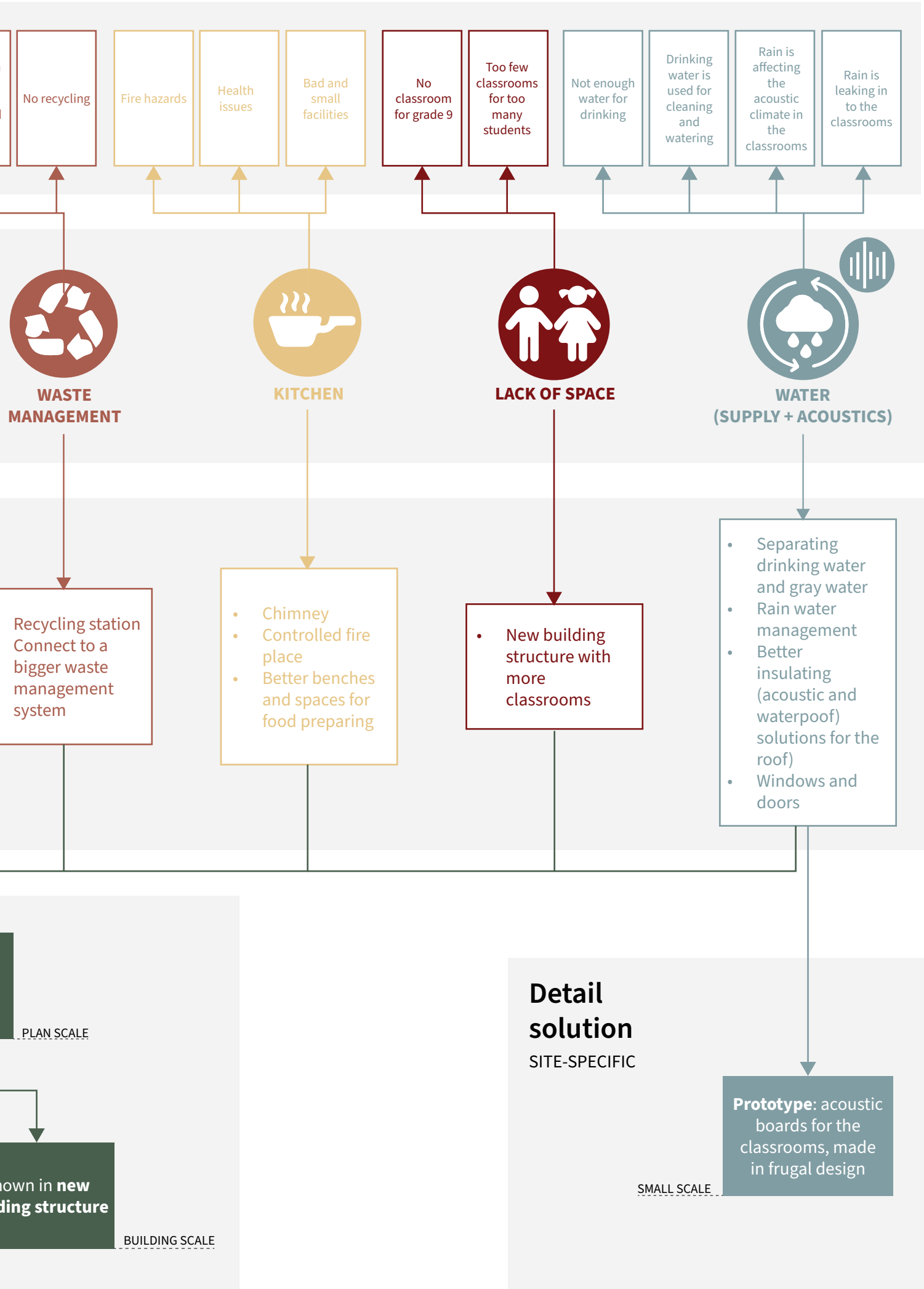


Strategy

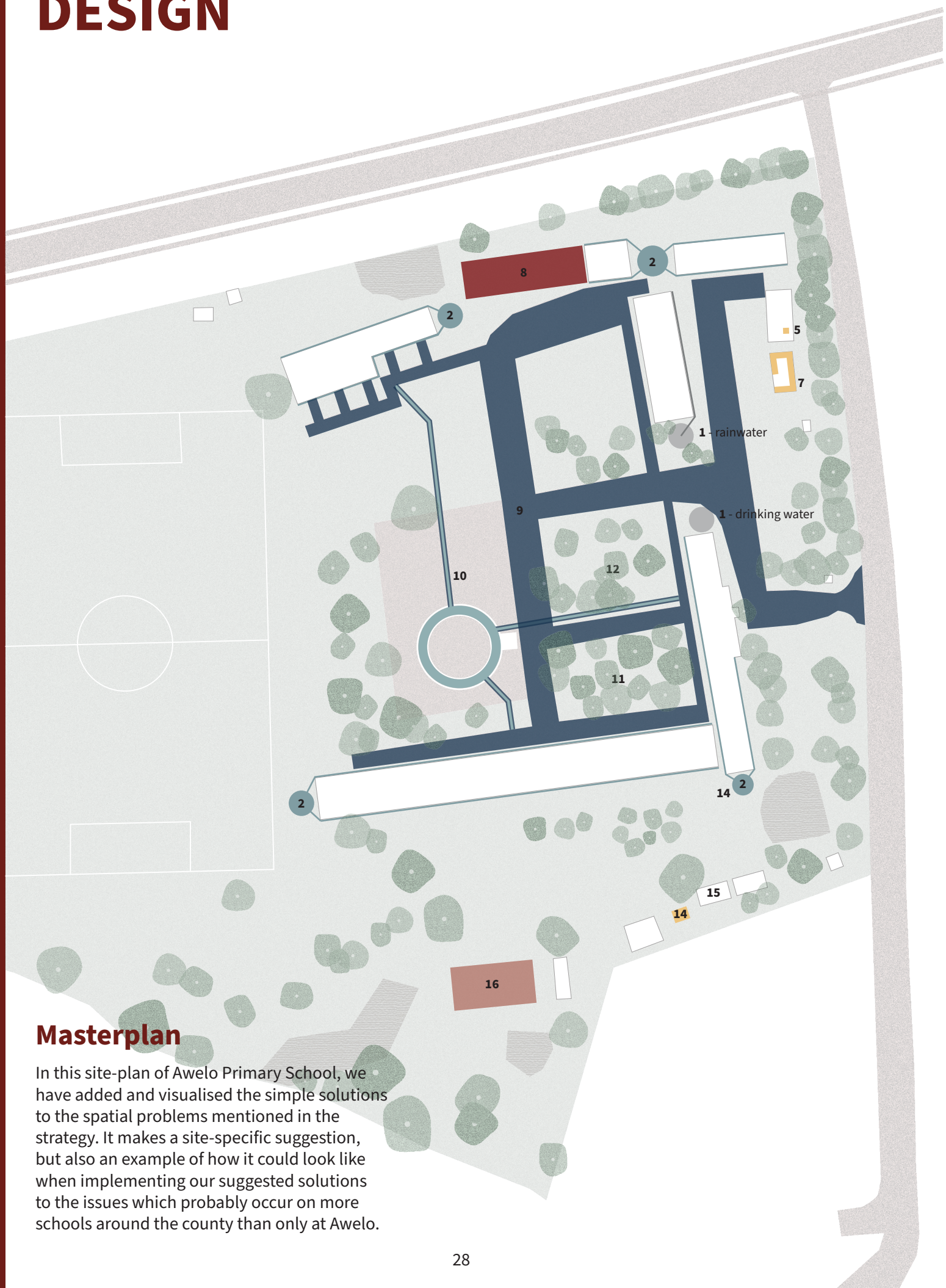
This strategy diagram presents our problem finding and problem solving that we found through the workshops with the children of Awelo Primary School. It also shows how we planned to work with these problems and solutions in our design project.

Our design project is presented in different scales, but all based on the same basic ideas.





DESIGN



Masterplan

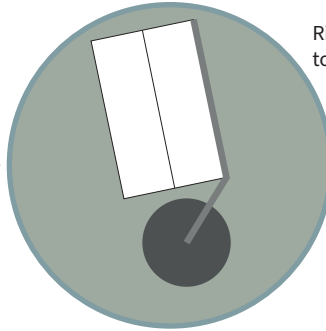
In this site-plan of Awelo Primary School, we have added and visualised the simple solutions to the spatial problems mentioned in the strategy. It makes a site-specific suggestion, but also an example of how it could look like when implementing our suggested solutions to the issues which probably occur on more schools around the county than only at Awelo.

SIMPLE SOLUTIONS

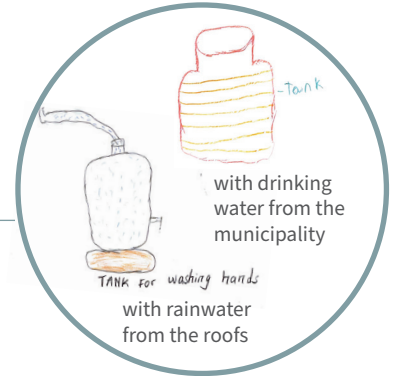
EXAMPLES AND REFERENCES

WATER (SUPPLY + RAIN)

1. separating drinking water and rainwater
2. developed rainwater harvesting
3. better insulating (acoustic and waterproof) solutions for the roof - PROTOTYPE
4. windows and doors to all classrooms



Ridges on existing buildings to collect rainwater in tanks



with drinking water from the municipality
TANK for washing hands with rainwater from the roofs

KITCHEN

5. chimney
6. controlled fire place
7. better benches for food preparing



Ref: The kitchen at the Simbara School in the Aberdares Mountains of central Kenya

LACK OF SPACE

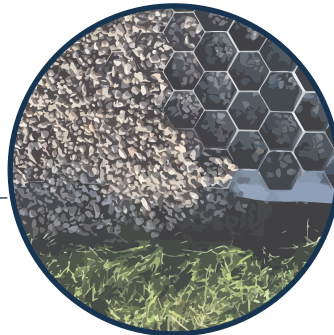
8. new building structure with classrooms for 9th grade

Ref: Typical Primary School in Kenya (standard)



MUD

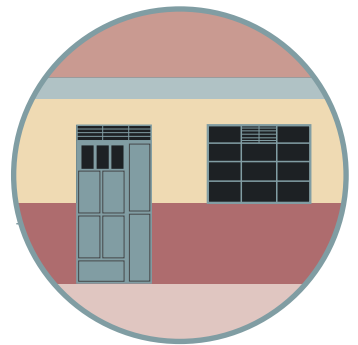
9. pavements, for example made of stabilized clay gravel
10. water diversion
11. green areas



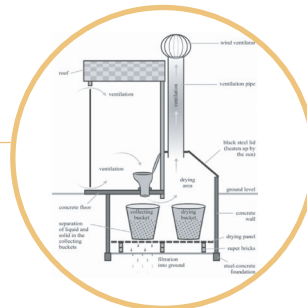
Pavement made of stabilized clay gravel

DUST

12. green areas
13. windows and doors to all classrooms



The "Otji" dry toilet system from Namibia



TOILET & SANITARY

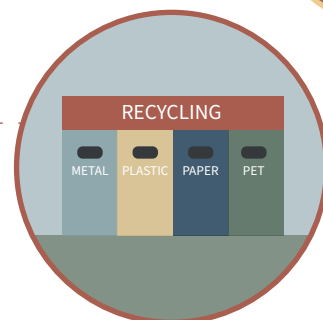
14. possibility to wash your hands
15. new type of dry toilets, for example urine separating toilets, to decrease the smell and as a more hygienic alternative



Handwashing station

WASTE MANAGEMENT

16. recycling station
17. connect to Siaya Municipality solid waste management policy



Building scale

Problems related to building structures



DUST

During dry season, the dust from the outdoor school yard enters the classroom facilities through broken windows or bad ventilation openings. The spread of the dust results in health issues among the students.



MUD

During the rain season, the mud from the outdoor school yard enters the classroom facilities with the children. The spread of the mud results in health issues among the students.



LACK OF SPACE

250 children begins grade 9 next August at Awelo Primary School. At the moment, they have classroom facilities that covers for 40 of the children, meaning only 16 % of the total amount.



WATER MANAGEMENT

Due to insufficient collection and management of rainwater resources, the school lacks adequate water for both drinking, cleaning and washing hands.



ACOUSTICS

The existing classroom facilities suffer of poor acoustics, mainly due to the heavy rain hitting the metal roofs and the high number of students sharing the same interior space. The noise levels become so loud that they disrupt the education.

Four Generations of Building Standards

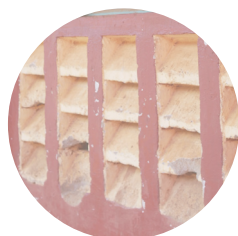
The structures of Awelo Primary School can be divided into three generations, with standards evolving mainly in terms of measurements, openings and ventilation for classrooms. To address the mentioned problems in the section above, the project suggests two design options: a low-tech upgrade of existing structures to improve resilience, and a new fourth-generation building. The new structure aims to provide a site-specific design for Awelo Primary School and challenge the national classroom building standards by presenting a modular system.



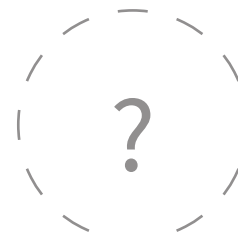
1st generation openings



2nd generation openings

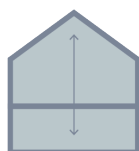


3rd generation openings

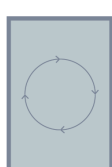


4th generation

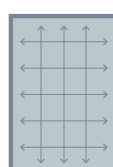
Strategies for new building structure



Lack of Space



Circulation



Flexibility



classroom measurements



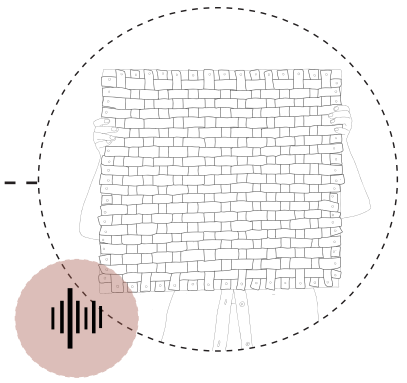
Implementations on generation 2 classrooms 8th grade

Implementation on existing structures

Resilient and Low-tech Design

Given the strained economic situation at Awelo Primary School, low-tech design solutions should be considered to improve existing structures. The classrooms face issues from rain, dust, and mud entering the unresilient buildings. Another major challenge is the high noise levels caused by heavy rain hitting the metal roofs.

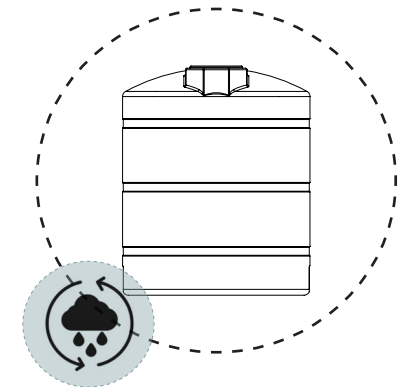
To address the above, we proposed crafting acoustic boards for the roofs using local, frugal materials. These boards are 60 cm x 60 cm wooden frames, with one side woven from 2 cm wide rubber strips from old tires and the other side woven from rope made of dried water hyacinths. To improve water management, we suggest installing gutters and tanks to catch rainwater for handwashing. Additionally, the ventilation systems from the newest buildings should be implemented in all existing classrooms to prevent dust and mud from entering and further cause health issues among the students.



Acoustic Boards To Prevent Loud Noise Levels



Natural Ventilation System From Third Generation Structures Should Be Implemented Into Generation 1 And 2.



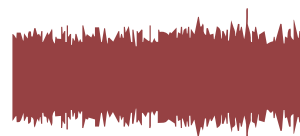
Gutters And Connected Tanks Should Be Placed Around All Existing Facilities For Rain Water Harvesting.

Prototype

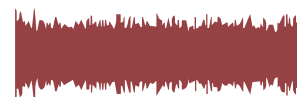
Throughout the project, several significant problems have emerged in Awelo. One of the biggest issues is the acoustics in the classrooms. Whether it is due to the rain pounding on the metal roofs, making it impossible to continue the lessons, or the general reflection of sound, the quality of teaching and thus the learning outcomes suffer immensely. With over 70 children in each classroom and poor acoustics, the problem is evident.

To counter this problem in the existing buildings, we came up with the idea of acoustic boards. These boards consist of a wooden frame with outer dimensions of 60 cm x 60 cm. This frame is woven on one side with approximately 2 cm wide rubber strips made from old car tires and on the other side with rope made from water hyacinths. Referring back to the background information, the use of these frugal materials would provide both an acoustic improvement and take care of scrap materials in the area.

Results from acoustic tests



Sound level *without* acoustic board



Sound level *with* acoustic board



Process Development of Acoustic Frames



Step 1: Collaborative Design

Through design workshops with the children, acoustic boards were discussed and drawn as a solution for noise problems. The children's ideas were later iterated by us to try out as a prototype in scale 1:1.



Step 2: Funding and Strategy Planning

Initially, the idea was to manufacture and weave all the frames ourselves or together with the community, where the materials would be bought with money from crowdfunding. Joshua provided us with the contact of two craftsmen who could lend us tools for money and help us build the wooden frames.



Step 3: Material Hunt

Apollo and Steve, two employees of the locally-based crafts community Zingira, were kind enough to help us procure pre-cut car tires as well as 2 sacks full of fresh water hyacinths, which we collected and bought in Kisumu City.



Step 4: Preparing Materials and Building

To be able to work with the water hyacinths, the material had to first be split by a knife and then dried in the sun. After drying, we could braid the individual strands into ropes. The process of braiding the ropes and connecting the ropes and the rubber to the wooden frames was part of our last workshop with the children.



Step 5: Testing and Implementation

On our last day, six frames were completed and ready to be tested. By first testing the acoustics with measurement recordings in a small space, we could find proof of their effectiveness and later assemble the first six frames in one of the existing classroom structures.



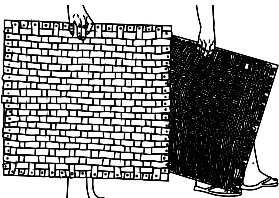
Step 6: Commissioning Further Production

With an initial aim of covering a full classroom, we realized that it took a great amount of time to equip the frames and ultimately decided to commission Zingira, through Apollo, to complete 15 frames after our withdrawal. Zingira brings together local artisans to produce and supply items crafted from recycled and locally sourced materials, so they would both have the knowledge and the opportunity to take the project forward. Our remaining 15 frames were given to the school for their Arts and Crafts lessons to anchor the project with our main stakeholder, the children.



Step 7: Ensuring Continuity

Currently, we are in contact with the craftsmen and Zingira, who are assembling the remaining frames. An issue is that the different stakeholders lack direct connections to each other and as the organizers, we notice an issue with the ongoing communication when we are not on site. However, the parents have independently gathered to assemble more acoustic boards, showing great interest in continuing the project.



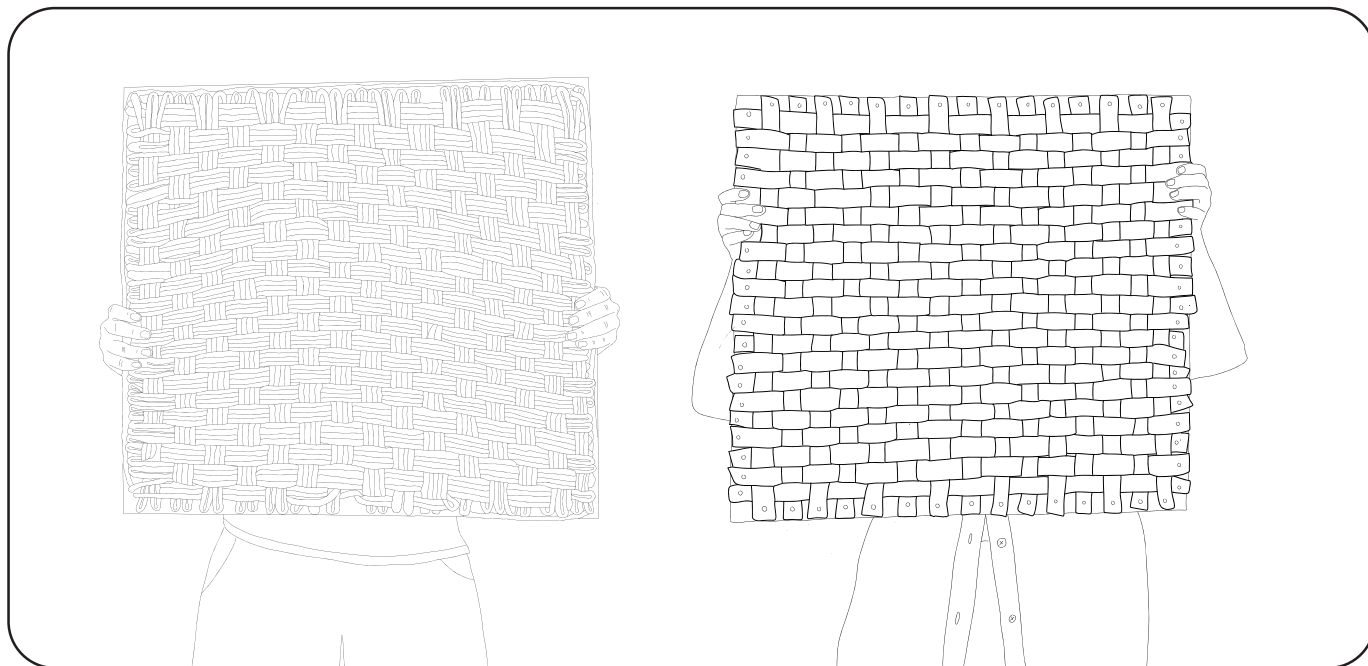
Step 8: Final Documentation

As a final part of the project, the follow up section of the report suggests a handbook that describes the production of the frames in a child-friendly way. This is aimed to be used as a guide for the Arts and Crafts classes to ensure that the project can continue after our withdrawal.

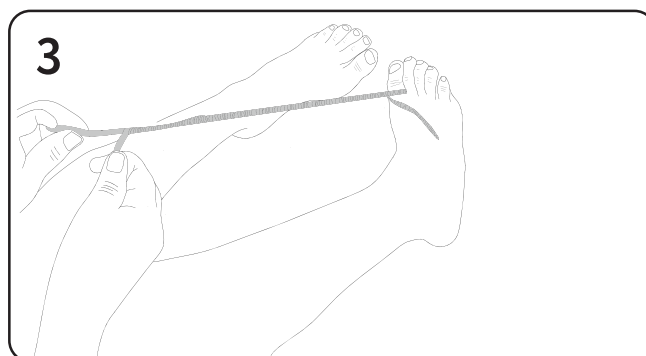
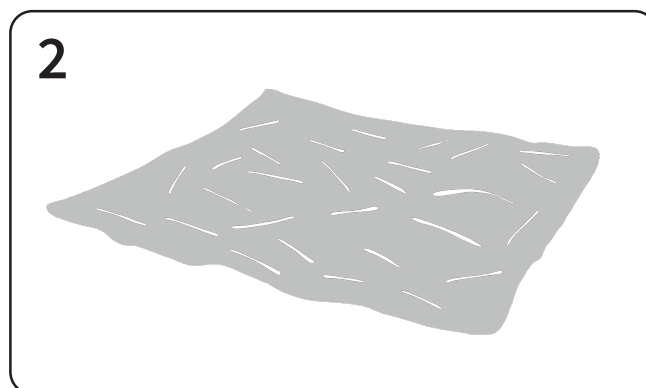
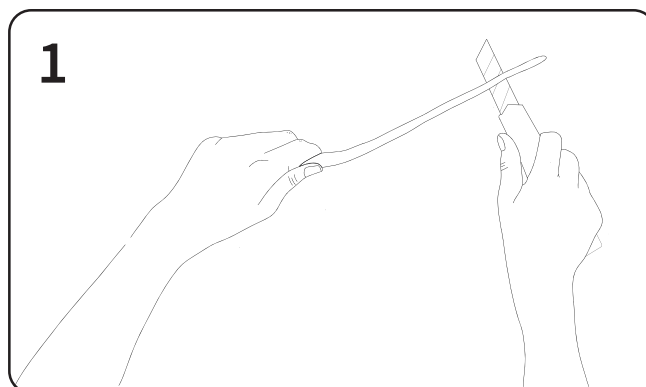
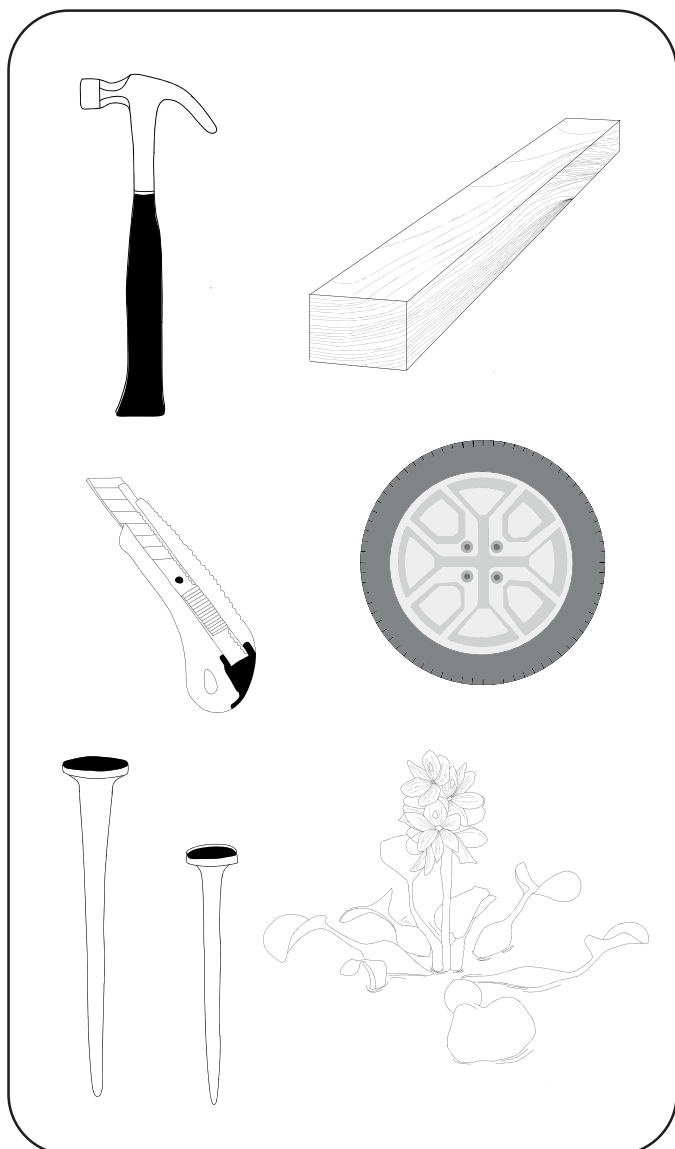
Critical reflection on the prototype process

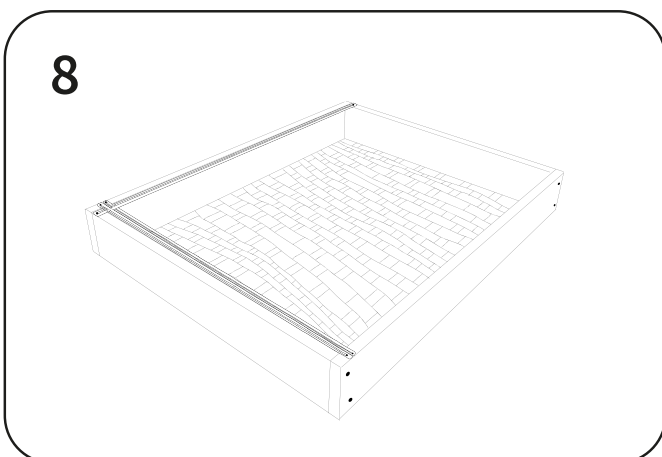
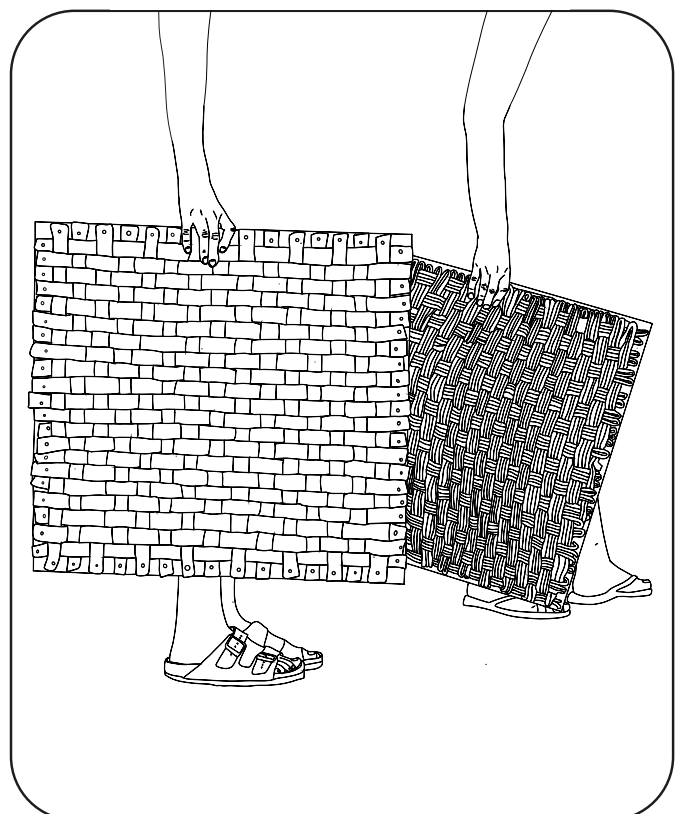
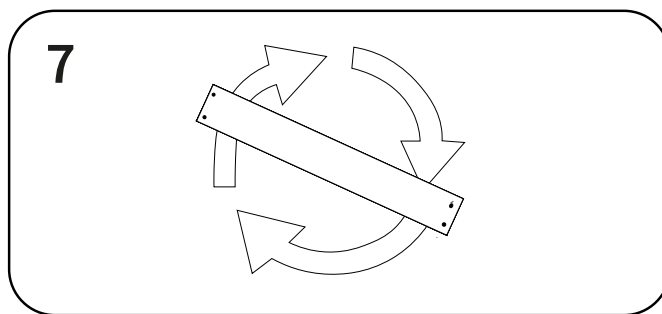
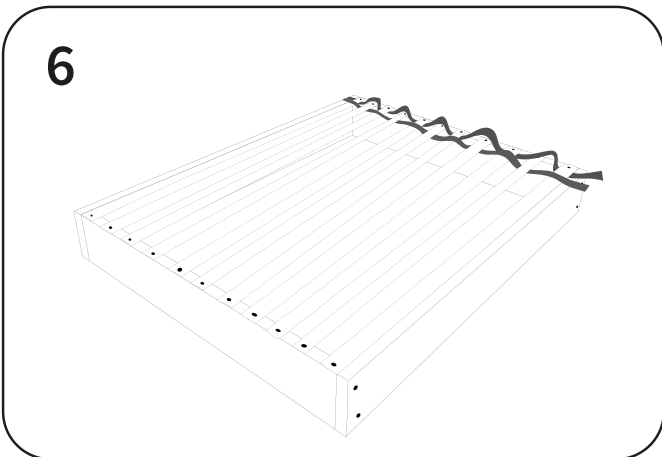
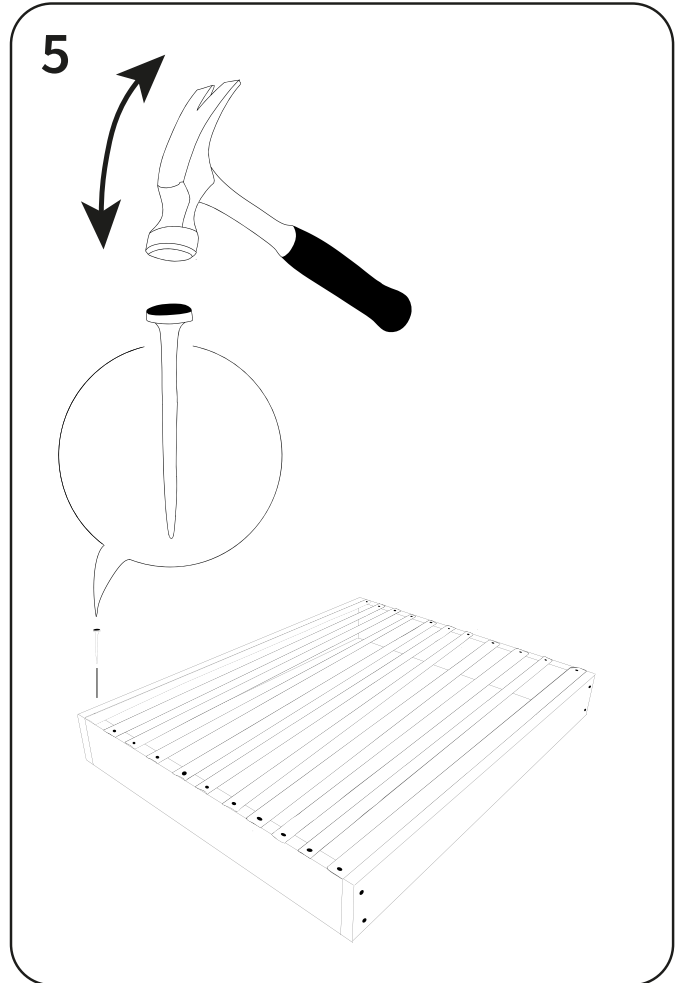
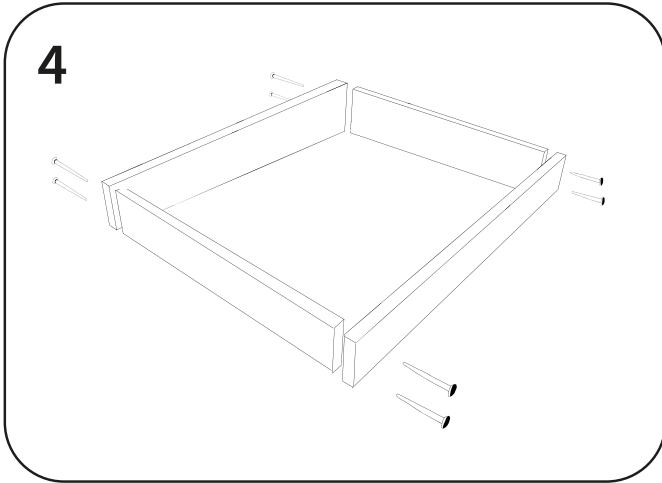
1. Funding is a challenge when initiating a project as a foreigner, both due to the sensitivity of not risking colonial behaviour, and the need to create something affordable enough to be maintained and continued by the local community after our withdrawal.
2. It is beneficial to work with several stakeholders and foster significant engagement within a project. However, for future projects, the communication between local stakeholders should be arranged more actively so that the project does not rely solely on the external team for organization. As it stands, there is a significant risk of the project being disrupted upon our withdrawal, instead of flourishing and continuing to grow within the local community.

Prototype construction



MATERIALS





New building

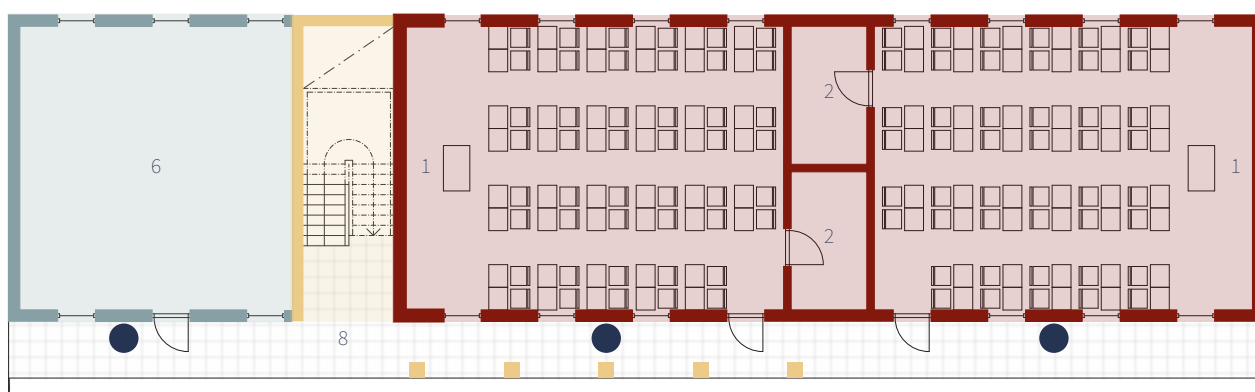
A concept for the new standard - the 4th generation?

Kenyan public schools are developed today from a standard by the national government to give as many children as possible the same conditions to great education. This standard involves many different spatial decisions including classroom dimensions, technical solutions for ventilation, windows, and many other aspects. As this standard evolves over time, this project likes to contribute to new ideas and input. One major problem with developments of public schools is the lack of funding and economical assets. Therefore, the proposal is to implement a new concept of building in separate modules to enable development over time where everything does not have to be built during the same period. The three examples of floor plans present different combinations of modules combined together to fit the purpose and site. Our goal is to provide a concept that can continue to be developed for creating school typologies through a standard that still adapts to the site and economical possibilities. Furthermore we integrate simple solutions we found through the master plan to create a more sustainable educational space that aligns with the aim of the national government.

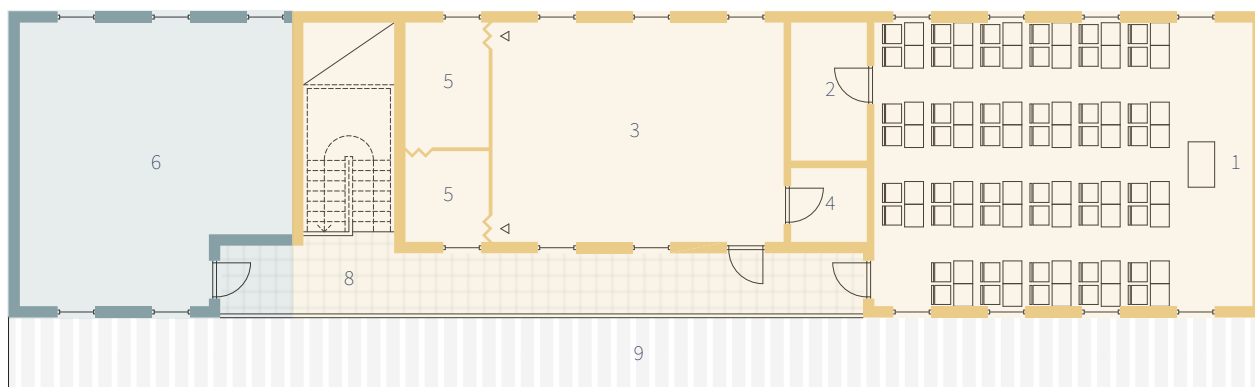
Legend for floor plans

- Water tap
- Module 1
- Module 2
- Module 3
- 1. Class room
- 2. Class room storage
- 3. Library
- 4. Library storage
- 5. Group rooms
- 6. Laboratories (flex)
- 7. Storage
- 8. Tiles
- 9. Metal sheet roof

Building suggestion for Awelo Primary School



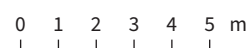
Plan 1.1
Scale 1:200

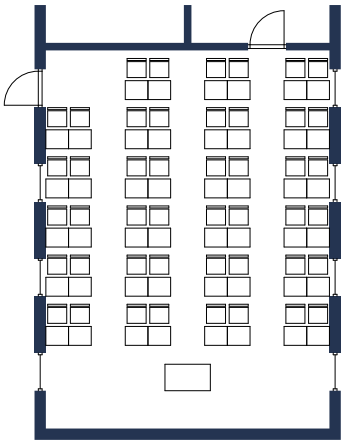


Plan 2.1
Scale 1:200

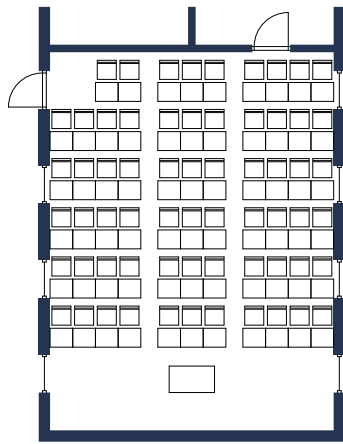


Facade
Scale 1:200

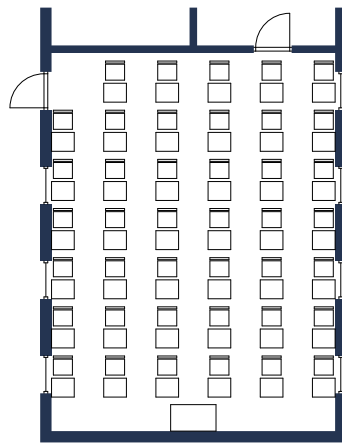




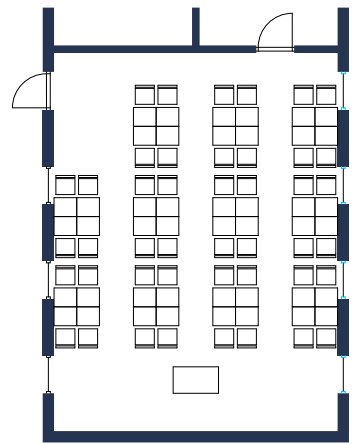
Floor plan - Class 46 st
Scale 1:200



Floor plan - Class maximized 64 st
Scale 1:200



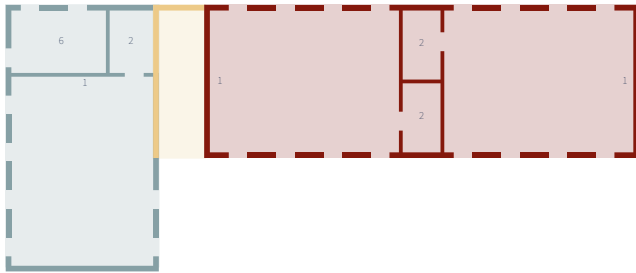
Floor plan - Exam 41 st
Scale 1:200



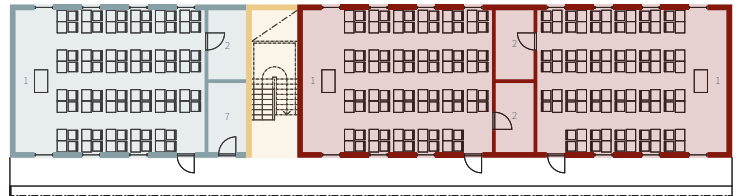
Floor plan - Group work 44 st
Scale 1:200

Constellations of a classroom

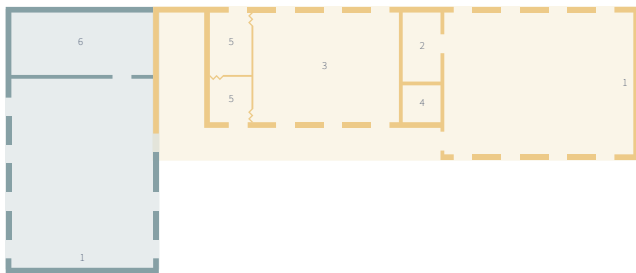
An important part of a classroom is the possibility to rearrange and adapt to different pedagogical situations. Therefore, the new classrooms are a little bit bigger due to the references we mentioned in the background. Bigger measurements in the classroom offer more space for the children to decrease the risks of spreading diseases and increase accessibility. It also provides more flexibility to furnish the space as shown in the floorplans above.



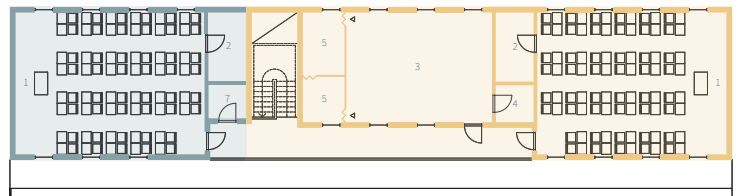
Plan 1.2
Scale 1:400



Plan 1.3
Scale 1:400



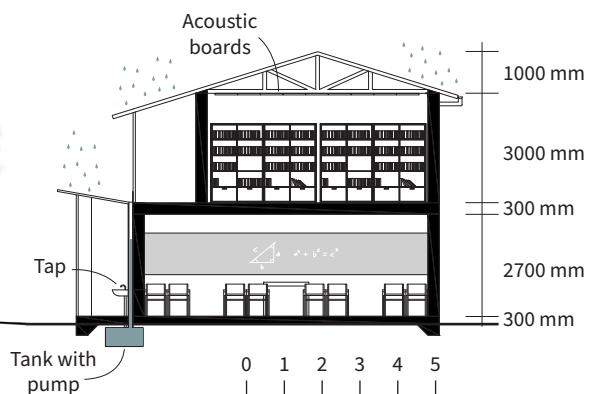
Plan 2.2
Scale 1:400



Plan 2.3
Scale 1:400



Facade
Scale 1:200



Section
Scale 1:200

CONCLUSION

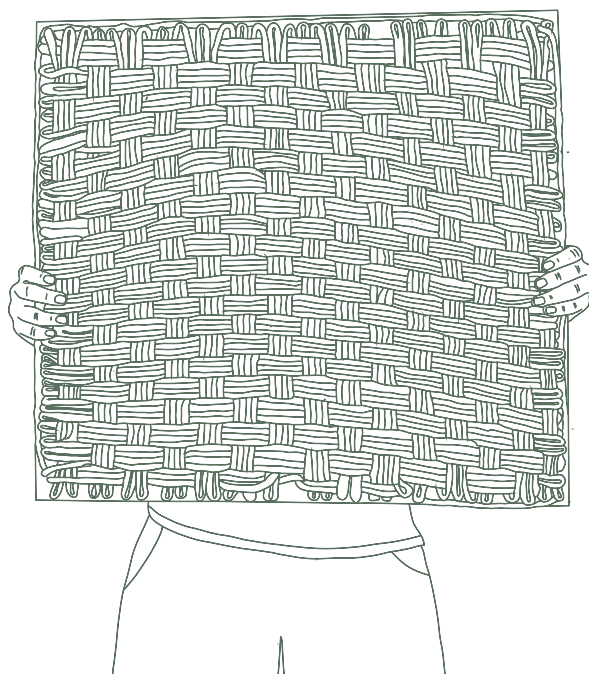
Hopes for future

The reason we worked with children is that the Siaya County Council in Kenya have addressed the issue of inclusivity in their new development plan (2023-2033). This plan highlights that there is a lack of involvement of certain groups, especially children, in design processes. We believe it is crucial for children to have a voice and opportunities to express their opinions and suggest improvements in society, particularly in schools. Since children are the main users of schools, they are the experts on what works and what does not. This plan, and the fact that they are addressing these issues, gives hope and meaning to our project.

We have come to the realisation how crucial it has been to engage with various scales and stakeholders to grasp the full picture within a foreign context. It has been invaluable to collaborate and exchange perspectives with individuals from diverse backgrounds and hierarchies. As we've learned from local insights, the "bigger picture"- methodology is needed to avoid corruption, colonial behaviour and misunderstandings. Hence, working across different scales has enabled us to discern the power dynamics accurately. Collaborating with entities such as The Siaya County Council, Jooust University, parents, teachers, and notably, children, has enriched our understanding immensely.

Understanding the decision-making system has been crucial in order for us to have realistic hopes for the future. After our learning on decision-making and the educational system, we have come to the decision to send our report to the Ministry of Education for their review and consideration of implementing our ideas, as they hold the greatest authority in determining the structure and operation of schools. We will also send the report to the school, so if they support it, they can advocate for it with the Ministry of Education. Since they are based in Kenya, their support will make the implementation process more efficient. Regarding the continuation of the development of the existing structures and the prototype, we believe and hope that Awelo will continue to slowly but steadily upgrade their classrooms from the ideas we sparked together. The prototype production has specifically been discussed with the school to continue to grow as part of their Art and Crafts classes and parents have already taken initiative to continue the project after our withdrawal. We believe that the reason for the high interest in continuing the boards may rely within the solution being simple, cheap and connected to well known cultural crafts.

To conclude, our future hopes for Awelo Primary School are that the Ministry of Education will prioritise equal educational environments and recognize the importance of upgrading and covering the basic spatial needs of primary schools in the county. Such an upgrade would enhance the quality of education in the classrooms and answer the SDG's of a sustainable future. Continuing the use of acoustic boards could be one way of implementing simple, cost-effective improvements to the existing structures. As a conclusion, it has become evident to simultaneously work with both bottom-up and top-down approaches to ensure a safe and promising future for Awelo Primary School.



Lessons learned during the process

Our project has mainly focused on the involvement of children in design processes, a perspective that is often overlooked and forgotten. Due to the Kenyan school tradition with evident hierarchies and a strict environment, we have during the on-site work understood that the perspectives of children are not highly valued. The culture of low child-views has been challenging while working with children as our main stakeholders, but also showcased the great importance of them being allowed to act as our main stakeholders.

Besides the impact of the built environment, we discovered that the children had significant difficulties with free drawing, without both rules and rulers. We believe that child participatory design could both increase the value of the children as well as bring softer values and creativity into the pedagogics of their own workspace. During the process, we saw positive development as they became more creative and freer and in general we may conclude that there is a clear difference in expectations of students between Kenya and Sweden. For example, Awelo Primary School has the motto “Better your best,” whereas in Sweden, students are told to “Do your best,” which has a different connotation. The different contexts offer different ways of viewing education and pedagogics where our collaboration has not only given a perspective on collaborative design but also some perspective on traditional education methods.

Regarding the workshops and their outcomes, we quickly realised the importance of structure and clarity to receive a clear red thread throughout the project. Our stakeholders were very focused on clear goals, and it became important to communicate the aim and goal for the project to ensure participation. For pedagogical value, it was equally important to create a clear sequence of activities to ease the children’s understanding of the project. Every workshop should prepare for the content of the next one to accelerate the assignment and motivate the children to develop their skills and ability to see connections. This approach was one of the most successful aspects of our collaboration with the children, as their knowledge level evolved over time.

Another significant factor impacting our process was the Kenyan educational system and who has the power to



Children, parents, and teachers at the exhibition

make decisions regarding the schools. Siaya County, with whom we had several contacts, was not in charge of decisions regarding the primary or secondary schools, which created great problems in the attempt to implement design ideas on site. The schools we worked with were instead managed under the National Government, with whom we had no contacts and couldn't get help to connect. If we had been able to communicate with this level of decision-makers, the project would have been easier to implement and realise both in a site specific and larger city scale.

For significant development to happen within the public education sector in Kenya funding is necessary and a great part of the problem behind slow school development is the lack of funding and economic resources. Since economics is a large and structural problem, rather than spatial, it is an outer factor that has been both hard and inevitable to consider within our own process. The difficulty in communicating with those who control the funding was a problem since they were at a national level and far from our contact network. However, this problem led us to adopt a frugal process, focusing on low-budget solutions with significant impacts on both ecological and economic sustainability. This approach may be a good solution in contexts like this, where resources are limited.

Regarding the possibilities of finding low-budget alternatives, we found that a strong community and care are significant advantages and that labour doesn't necessarily require money. In situations where people with a strong concern for the purpose are gathered, the work can be done for free by these individuals offering their time. When we left Kenya, we handed over the remaining material for the acoustic boards, hoping the school would continue the work in their arts and crafts lessons. A few weeks after we left, we were told that the parents had gathered to continue the work and speed up the development of their children's school out of care for the children. This is a good example of how strong communities, such as those in Siaya, can make significant progress despite financial limitations.



Drawing workshop at Awelo Primary School

Logical framework matrix

	Project Description (Strategy of Intervention) What the project intends to do (strategy of intervention)	Performance Indicators Indicators measure whether the objectives on each level are achieved	Monitoring (Means of Verification) Means of verification indicate where and in what form information on the achievement of objectives/indicators can be found	Assumptions (Risk Assessment) Assumptions are conditions which could affect the progress of the project but which are not under direct control of project management.
Overall Objective	- Change the power relation between the adults and children - Green schools initiative	- Involvement and result from workshops - Numeric values of weather/sound etc.	- architects without borders supporting litterateur - the children - case studies/ reference projects - laws/governmental support	- Weather conditions - Kenyan time - Money and funding - (Over)expectations of stakeholders - Laws and restrictions - The children's dependency - Communication - Lack of interest or understanding
Project Purpose	- To enhance the school environment in collaboration with the main, but also most vulnerable, takeholder of the project. The children.	- Level of involvement, participation and knowledge exchange	- architects without borders supporting litterateur - the children - case studies/ reference projects - laws/governmental support	- Weather conditions - Kenyan time - Money and funding - (Over)expectations of stakeholders - Laws and restrictions - The children's dependency - Lack of interest or understanding
Results (Outputs)	- Good methods for involving children in design processes - Timeline for continuation - Design proposal and prototype	- Feedback from stakeholders - Final feedback workshop with the children - Proof of the working prototype	- Level of use - Before and after comparison	- Interest of children - Communication - Culture - Money, materials
Activities	- Walk and talk - Workshops - Prototyping - Site analysis - Interviews/Meetings - Research - Designing - Networking	Resources (means) - Knowledge - Interest - Paper, pens etc - Funding - Building materials - Craftsmen	Costs - Snacks, drinks - Materials - Prototype - Driver - Craftsmen	- Time - Weather - Money - Health

Stakeholder	Basic characteristics	Problems	Interests	Potential
Children/learners	Forty Awelo Primary School children joined workshops to solve school facility issues.	Poor school conditions, Transportation to/from school, Mud, Dust, loud noises	More space, Less noise, A good future	High
Teachers and staff	Teachers identified issues and assisted in workshops.	Poor educational conditions	qualitative educational spaces	High
Parents	Parents attended meetings to voice concerns and observed presentations.	Economy, concern about their children	a good future for their children	Medium
RS Students	Five Chalmers University students led and co-designed the project.	Cultural differences, miscommunications	To gain knowledge, to have a good collaboration, to teach and learn from each other	High
Joshua Wanga	Professor Joshua Wanga supported the project.	Grew up with these conditions and has children of his own that learn in these conditions.	Expanding his Knowledge, keep good collaboration with Reality Studio and Chalmers.	Medium
Municipality	The municipality discussed city-scale problems and school building responsibilities.	No know-how to include children in planning processes. the government holds power over primary schools.	Learning how to include children in planning processes.	Medium till Low
Ministry of Education	The government provides essential services, including education.	No know-how to include children in planning processes.	Green School Initiative and Sustainable Future Solutions.	Low
Zingira and Craftsmen	Zingira unites artisans to create products from recycled materials, with Apollo as the main contact.	Having to go back and forth between Kisumu and Siaya	Making a profit	Low

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- For improving the grammar and language of our report, we utilised the assistance of ChatGPT (OpenAI, 2023).

A black and white photograph showing several children's hands engaged in a drawing activity. They are sitting at a wooden table, using pencils to draw on sheets of paper. The scene is captured from a high angle, focusing on the hands and the drawing process. The lighting is soft, and the overall atmosphere is one of focused creativity.

CHILD PARTICIPATION IN DESIGN PROCESSES

Participation methods developed during the
collaboration between Chalmers University of
Technology and Awelo Primary School

The project

This project involves a team from Chalmers University participating in the Master's program Architecture and planning beyond sustainability, working in close collaboration with children in Siaya County, Kenya, especially kids from Awelo Primary School located in Siaya.

The collaboration started because we aim to involve and engage children more actively in design processes. Children are a vulnerable group often excluded from these kinds of activities, as well as from many decision-making processes in society.

Kenya and Siaya are developing plans to address these issues of inclusion. In a project like this, where we are working with Awelo Primary School, it would be a mistake not to engage with the experts of the place: the children, who are our most important stakeholders in this work.

The structure of the project

The structure of our project in Kenya was not a linear process. We were working with two parallel goals and on different scales. To get a better understanding of how we have worked we visualised the project structure in the figure above.

Overall, the aim is about involving children in design processes. Then we have worked parallel with the two goals mentioned. One goal is about trying out and documenting different participation methods for integrating children in design choices. The other goal is about making a design based on the collaboration with the children of Awelo Primary School. The figure also visualises what types of material we want to produce, to communicate our two goals.

Participation methods for children

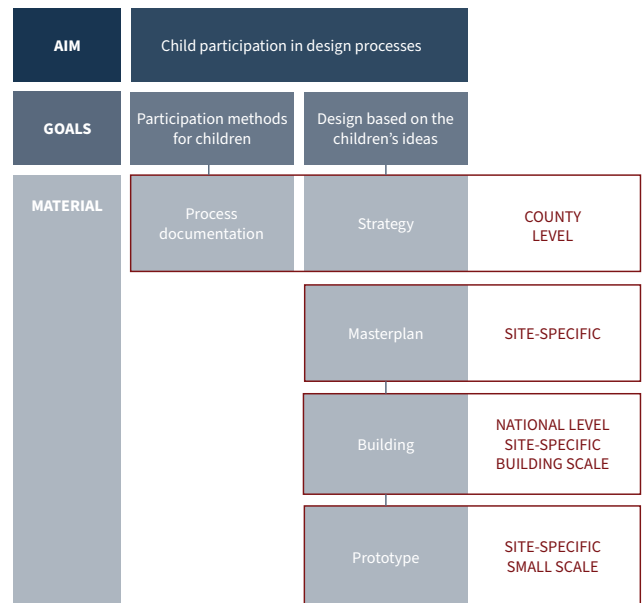
This appendix handles the first goal, about communication participation methods for children. Here we have gathered information and reflections about the workshops we had at Awelo Primary School. Our hopes are that these can be helpful in the continuation of the work involving children in design processes.

Workshops at Awelo Primary School

Awelo Primary School is a public school situated in Siaya Township. It holds 1500 children, from grade pp1 to grade 8. Next year, due to a change in the national school system in Kenya, there will be a grade 9 in the school as well. Since it differs a lot in age when you start and finish school, the ages of the student in the school are approximately from age 4 to 18.

During our workshops we worked with a selection of 40 children from grade 4 to grade 8. The selection were already made for us when we came and according to the teacher who made the selection, it was made very random, so that all kinds of children with different kinds of backgrounds were going to be represented.

Project structure



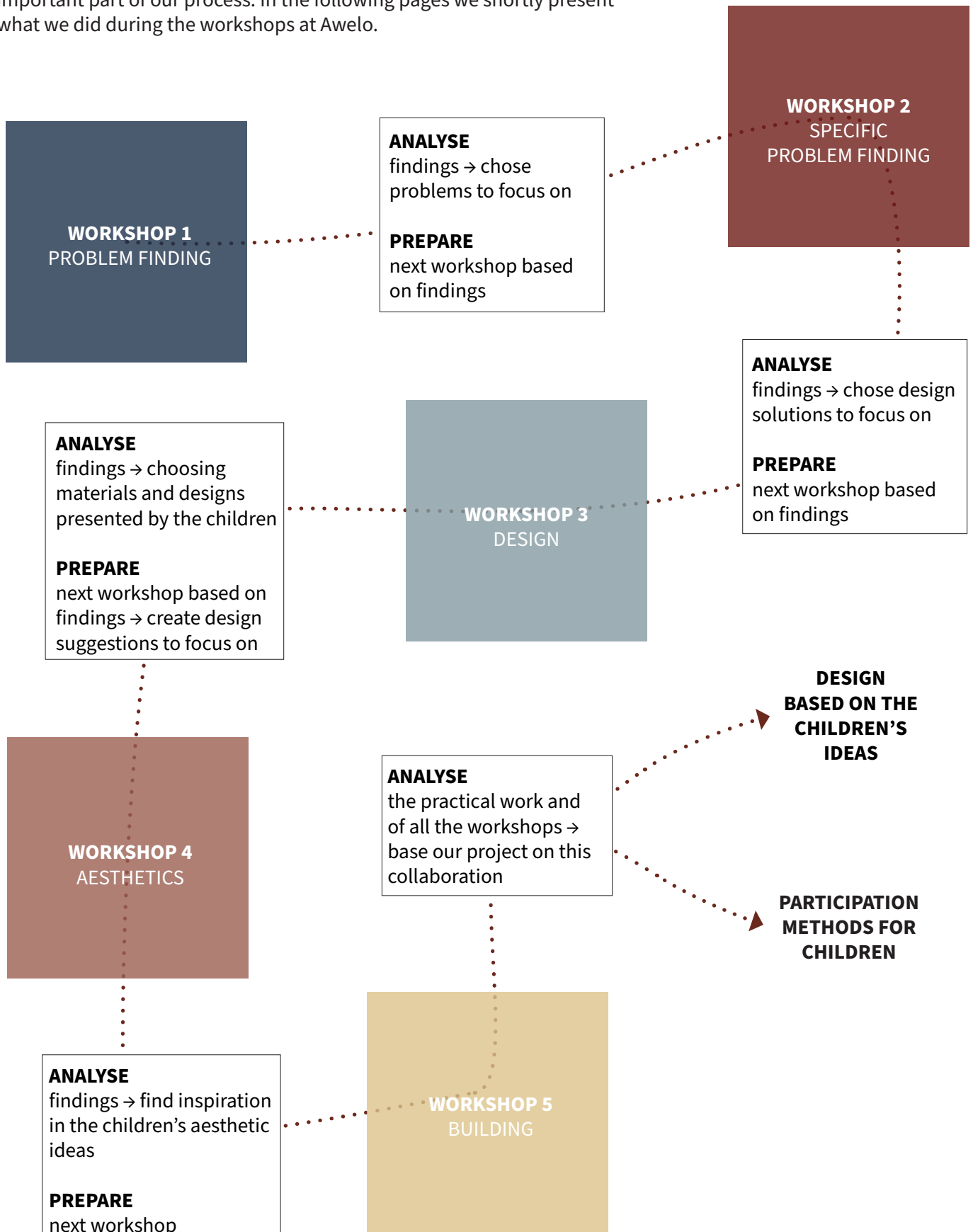
Content and schedule

Every workshop was two hour long and had the same basic structure. Making it both fun and instructive was something we valued. The schedule usually looked as follows:

- Introduction
- Game
- Exercise 1
- Fika (snack break!)
- Game
- Exercise 2
- Ending

Workshop timeline

To get out as much as possible from the collaboration with the children from Awelo, we made a clear structure of our workshops. We decided the main theme of each of them, and made sure there would be a clear "red thread" between them. Each workshop should be based on what we did the last one, and therefore the analysis following every workshop was an important part of our process. In the following pages we shortly present what we did during the workshops at Awelo.



Workshop 1

WHAT

Methods:

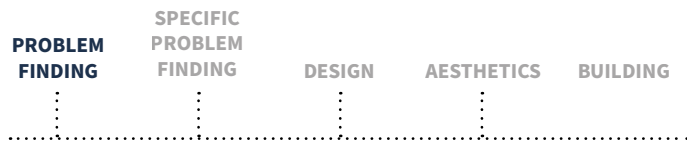
- Mapping exercise: map your school
- Drawing workshop: draw what you want in your school

Purpose:

- Getting information about the problems that the children see at their school.

Game:

- The opinion corner



ANALYSIS

- We got more information about the spatial characteristics, qualities and issues of the school, and could choose some problems to immerse ourselves in.
- We understood more of the children's wishes and concerns.

MAPPING EXERCISE: Map your school

Aim

- To find spatial qualities or issues in the school from the children's perspective

How

1. Divide into smaller groups - every group gets a map of their school + a dream bubble
2. Every child gets a specific coloured pen --> writes name, age and gender on a legend paper
3. Play! Play the dice and answer the question by writing the number on the map
4. Ask follow up questions and take notes

Material

- Dices
- Paper
- Coloured pencils
- Marking tape

Preparations

- Create maps
- 6 questions

Questions

1. Pin your favourite place at school
2. Where do you spend your breaks?
3. Where is your least favourite place?
4. When there is heavy rain, where do you feel safe?
5. Where and when is it very noisy?
6. 6. What would you like to have in your school?

DREAM CLOUD

DRAWING EXERCISE: Dream cloud

Aim

- Complete the other workshop. Get visual input of the children's wishes for their school.

How

- Same groups
- Draw what they wrote in the dream bubble (if more time: make up new ideas and dreams)
- Ask them to write their name, age and gender on the back

Material

- Paper
- Coloured pencils

REFLECTIONS

What worked well

- Dream cloud gave a lot of information
- Playing games is good! To get loose and get new energy
- Having nametags made it personal - good!
- Making them look at a map and relating to it was good
- Making a legend of the children, so that we could group them when analysing
- Taking turns in rolling the dice - each kid got their turn and time

What did not work

- Nametag thing took too long when in a big group
- Keeping track of dice numbers were difficult
- Questions about rain and noise were a bit unclear. The leading questions in general could have been rephrased.
- Language and understanding is a barrier with younger children. 10 and above is preferable

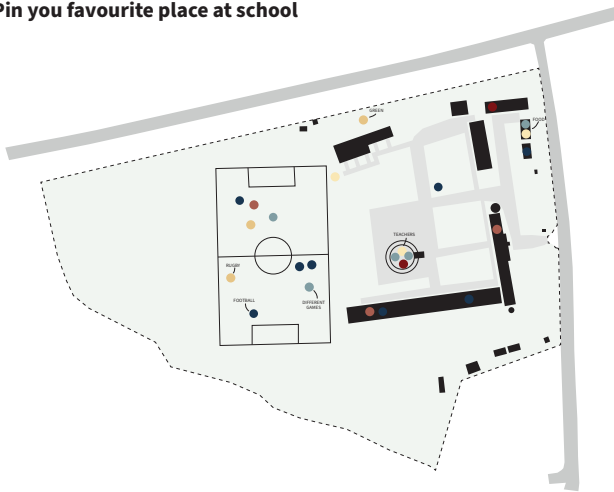
Unexpected

- The children often understood more than we knew (e.g. with the maps)

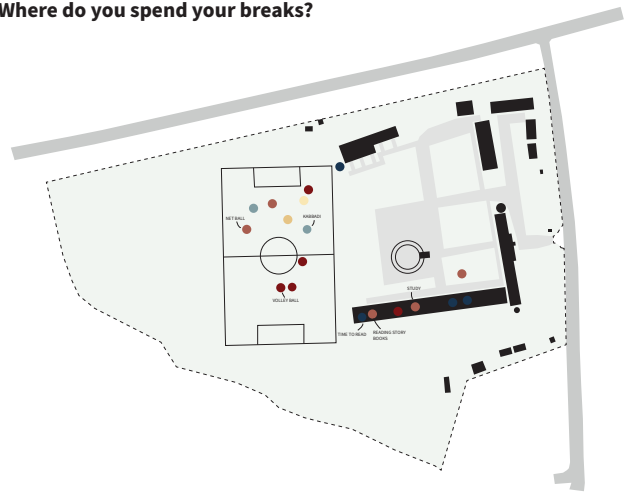


Mapping exercise: Map your school

1. Pin you favourite place at school



2. Where do you spend your breaks?



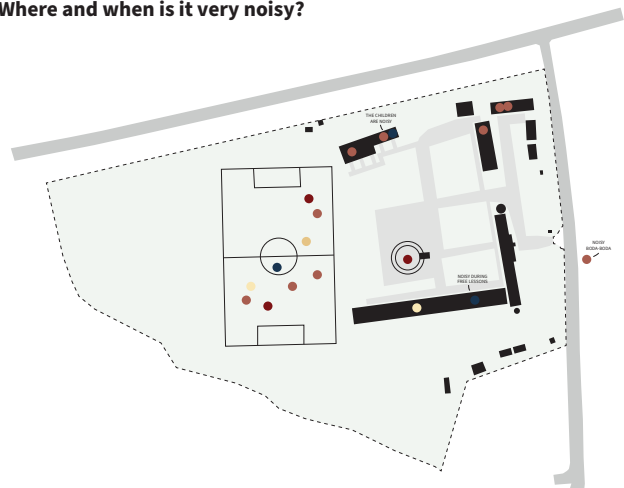
3. Where is your least favourite place?



4. When there is heavy rain, where do you feel safe?



5. Where and when is it very noisy?



- ≥ grade 4, girls
- ≥ grade 4, boys
- grade 5-6, girls
- grade 5-6, boys
- grade 7-8, girls
- grade 7-8, boys



Dream cloud

Collection of words written in the dream clouds, that showcase what the children want in their school

- Grade 4, girls
- Grade 4, boys
- Grade 5-6, girls
- Grade 5-6, boys
- Grade 7-8, girls
- Grade 7-8, boys

Workshop 2

WHAT

Method:

- Drawing exercise: draw you dream classroom
- Problem solving with frugal collaging

Purpose:

- Getting input from the children on the issues we found in workshop 1.
- Introduce the children to different kinds of drawings.
- Learn more about frugal design and local resources.

Game:

The knot (cooperation)

DRAWING EXERCISE: Dream classroom

Aim

- Teaching the children architectural drawings
- Getting input on what the children want in their classrooms

How

1. Divide into smaller groups
2. Introduce plan drawings: explain and show examples. Then let the children draw plan drawings of their dream classroom
3. Introduce facade drawings: explain and show examples. Then let the children draw facades of their dream classroom

Material

- Paper
- Coloured pencils

Preparations

- Prepare simple plan and facade drawings (if you don't want to draw them at place)

REFLECTIONS

What worked

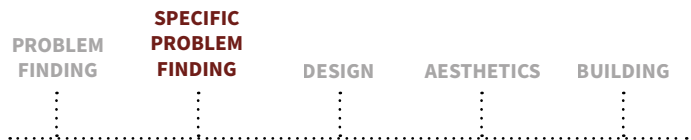
- More efficient with the nametags
- A good thing to challenge the children's creativity - also "eye-opening" for us to see their boundaries
- Shopping list worked well

What did not work

- Knot game was a bit difficult for some kids. First game should be more playful and energetic
- Too few games and too many concentrations moments
- Introducing new terms without showing examples and explain them when introducing them (e.g. plan, facade, 3D model, design)
- Mutual respect was a bit difficult today. Sometimes they didn't listen or obey.

Unexpected

- Loss of respect?
- That the children got comfortable with us so fast



ANALYSIS

- We understood more about the four chosen topics from the children's perspectives. They gave us information of the more specific issues they had to each topic, and presented solutions that they came up with.
- We got an idea of the children's creativity. We got the impression that they are not used to work very freely creative and artistic, as the children in Swedish school usually do.

COLLAGING EXERCISE: Solving spatial issues

Aim

- Learning more about four chosen issues through the children.
- Getting creative in 3D and with frugal design.

How

1. Divide into smaller groups (same as last exercise)
2. Collect material for the collages. We made a "shopping list" with the things the children should collect in the school yard.
3. Each group is given a topic of an issues found in workshop 1. The topic is discussed in the group, regarding specific problems of the topic and possible solutions.
4. Collaging time! Each group makes a collage on an A3 with their collected material, illustrating spatial solutions.

Material

- A3 papers (one to each group)
- Natural collected material
- Pens

Preparations

- Shopping list

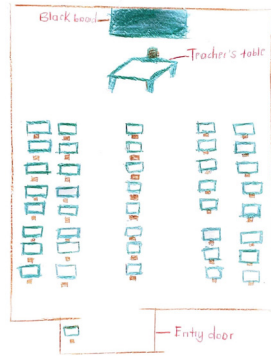
Topics

- Mud
- Dust
- Rain
- Water supplies



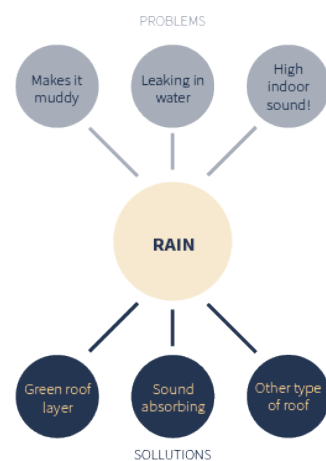
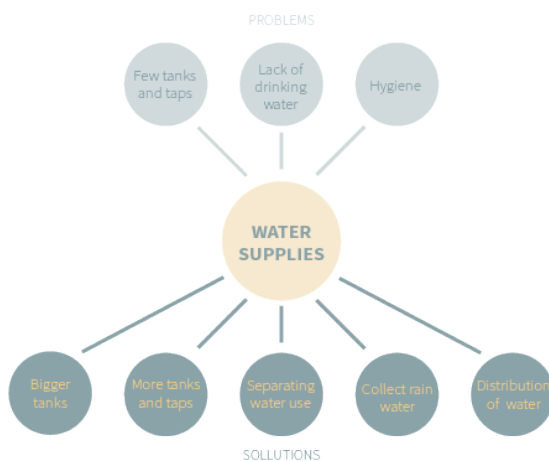
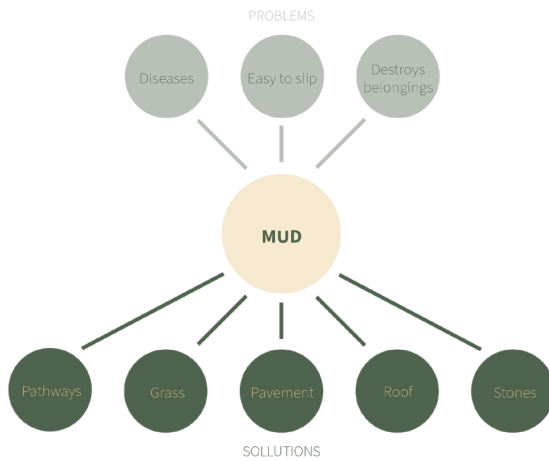
Drawing exercise: draw your dream classroom

Examples of facade and plan drawings drawn by the children of their dream classroom.



Problem solving with frugal collaging

The four following topics were presented to the children. We discussed specific issues and potential solutions with them. Then they did collages of the solutions.



Workshop 3

WHAT

Methods:

- Directed storytelling
- Drawing workshop: answer our questions on specific issues by making drawings

Purpose:

- Get the children to design solutions to the spatial issues we have found
- Spark the children's problem solving skills

Game:

- Tomtesmyg = 1, 2, 3 LION! (energy)
- Head and shoulders knees and toes



ANALYSIS

- We got a lot of specific design ideas on the four chosen issues we proposed to the children. The children got very creative.
- We got a bigger understanding of how the people in the context usually work with design, materials and spatial and natural issues.

DIRECTED STORYTELLING

Aim

- Getting the children's ideas and visions for the future in both text and drawing, regarding some chosen issues

How

- Divide into smaller groups
- The children receive a question that they are going to answer through a short story and a small drawing

Material

- Paper
- Coloured pencils

Questions:

- Describe a design solution that makes washing hands on Awelo Primary School possible
- Describe a design solution that makes it possible to have classes inside even though it rains a lot

DRAWING EXERCISE: Draw a solution

Aim:

- Showing them our examples and explaining, discussing
- Getting their ideas and input on our focus issues

How:

- Divide into smaller groups (same as last)
- Receive a drawing and answer on the leading question through making a drawing
- Draw for 12 min, then receive a new drawing

Preparations

- Prepare drawings

Drawing and questions:

- Pipes on the houses - where could the pipes lead?
- Roof shape for rainwater collection - how could you make a roof that collects water?
- Frugal design - what materials can you build with? What can we find here?
- Acoustic interior solutions - what materials and shapes can you use to lower the sound in the classroom?

REFLECTIONS

What worked

- To put some pressure on the children
- Pin point the kids that are a bit harder to work with
- We did well even though plans changed. We adjusted very well to the circumstances we faced. It had rained during the night and it was very muddy, and we were one person less so we had to change our roles a bit
- That we putted in some playful games, made our time with the kids funnier
- That we added more time for explanation

What did not work

- Safetynet: One of us got sick, and we had not prepared enough to hand over the work. The mood in the group also became a bit stressed.
- Packing: It needs to be done the night before

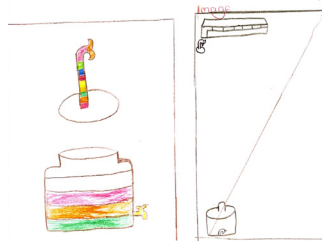
Unexpected

- That the children likes that we are clear
- It works even when things change!

Directed storytelling Two examples of stories

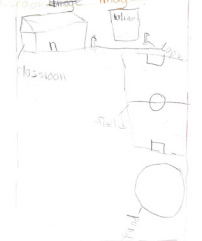
Name: Prossimo
Grade: 7
Age: 13

Our school has got only 2 tanks and we need 7 tanks so that the tanks could save more water during the dry season because sometimes during the drought season we suffer searching for water to drink and to wash hands.



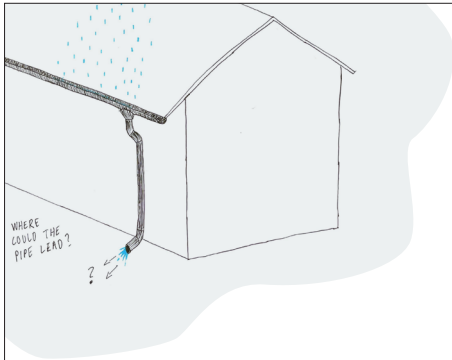
Name: 9
Grade: 4
Age: 9

In our school we use drinking water to wash hands. But we can also make a small pond and even add more taps for water. There are places where we can put taps because we can wash hands with them. Even we can put the tap in new every classroom.



Drawing exercise: draw a solution

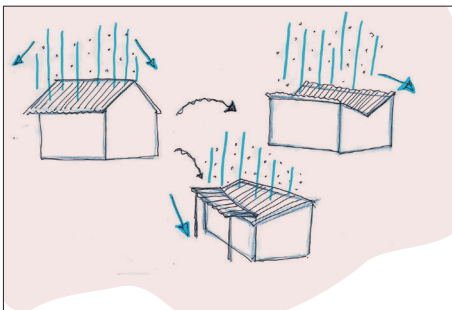
All children answered the questions through drawings



Where could the pipe lead?



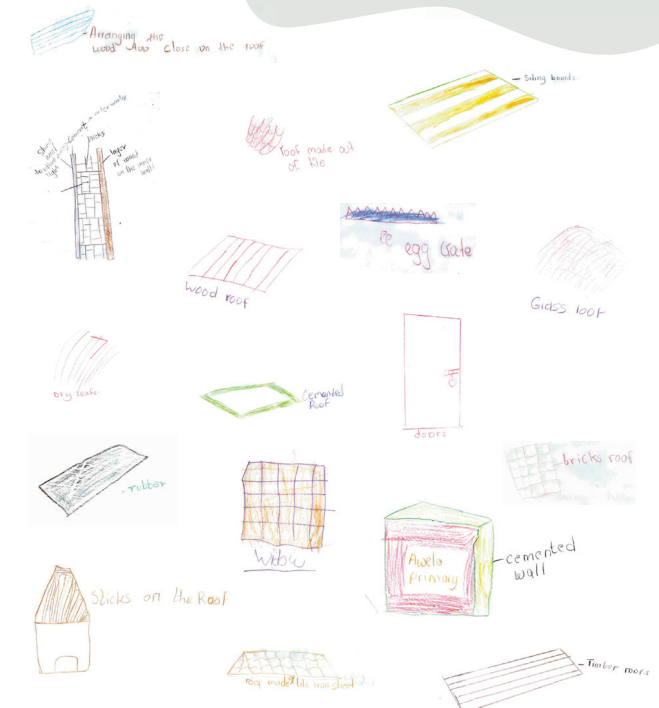
What building materials do you prefer?



How can roof shapes collect water?



What materials can you use to decrease the sound in the classroom?



Workshop 4

WHAT

Method:

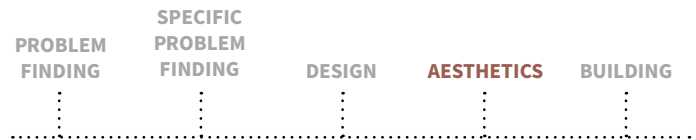
- Drawing exercise: colour palette and pattern
- Drawing exercise: decorating designs - material, colours, patterns, aesthetics etc.
- Walk and talk: a day in the life of a learner at Awelo

Purpose:

- Get the children's input on design and aesthetics of the solutions we presented for them.

Game:

- Under hökens vingar kom
- Head and shoulders knees and toes



ANALYSIS

- The children once again got very creative, and we received a lot of aesthetic ideas. A lot of colour and playful patterns!
- The walk and talk exercise gave a lot of information on how the children's school days look, which have been helpful for us in the design project.

DRAWING EXERCISE: Colour palette and pattern

Aim

- Getting creative and artistic!
- Getting aesthetic input from the children

How

1. Show the children examples of a colour palette and a pattern
2. Let the children draw their own colour palettes and pattern!

Material

- Paper
- Coloured pencils

Preparations:

- Draw a colour palette and a pattern to show as an example

DRAWING EXERCISE: Decorating designs

Aim

- Getting creative and artistic!
- Getting aesthetic input from the children

How

1. Let the children choose one of our pre-made drawings that they are going to colour and decorate the way that they would prefer

Material

- Paper
- Coloured pencils

Preparations:

- Make black and white drawings of spatial designs for the children to decorate

REFLECTIONS

What worked

- The first two tasks worked super well, the instructions were good
- Patterns and colors are so visual, so that workshops worked well
- Walk and talk: "follow a student" gave a lot of information!

What did not work

- Walk and talk was hard since we lacked one persons

Unexpected

- It feels like it will be hard to go home after this - we have started developing connection with the kids
- A three-year old was brought by one of the kids
- It can go so fast to develop creativity! Children learn so fast. The first two workshops it was a bit difficult to spark their creativity, but now they really get it.

WALK AND TALK: A school day of a learner

Aim

- Getting to know more about how a normal school day looks like for the different grades of Awelo
- Getting more information about the spaces of Awelo

How

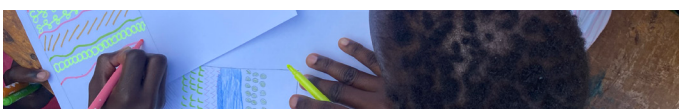
1. Divide the children into their grades
2. Let them show you how they move around on a normal school day while they also explain what they do and when.
3. Take notes and sketch on a map while you're walking.

Material

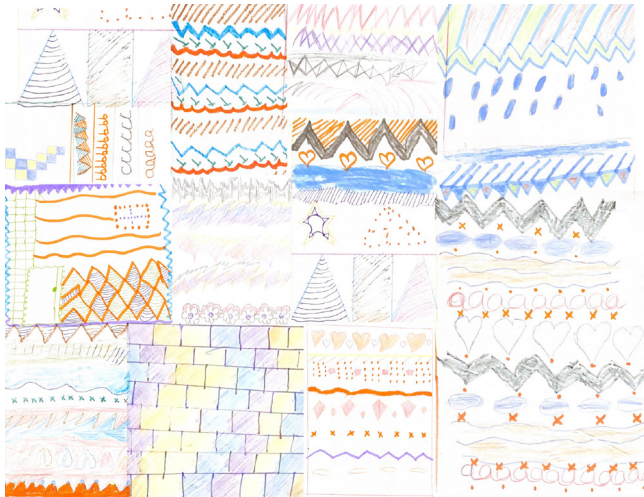
- A (sketched) map and a pen

Preparations:

- Prepare a map that you during the walk and talk can draw and take notes on



Drawing exercise: colour palette and pattern

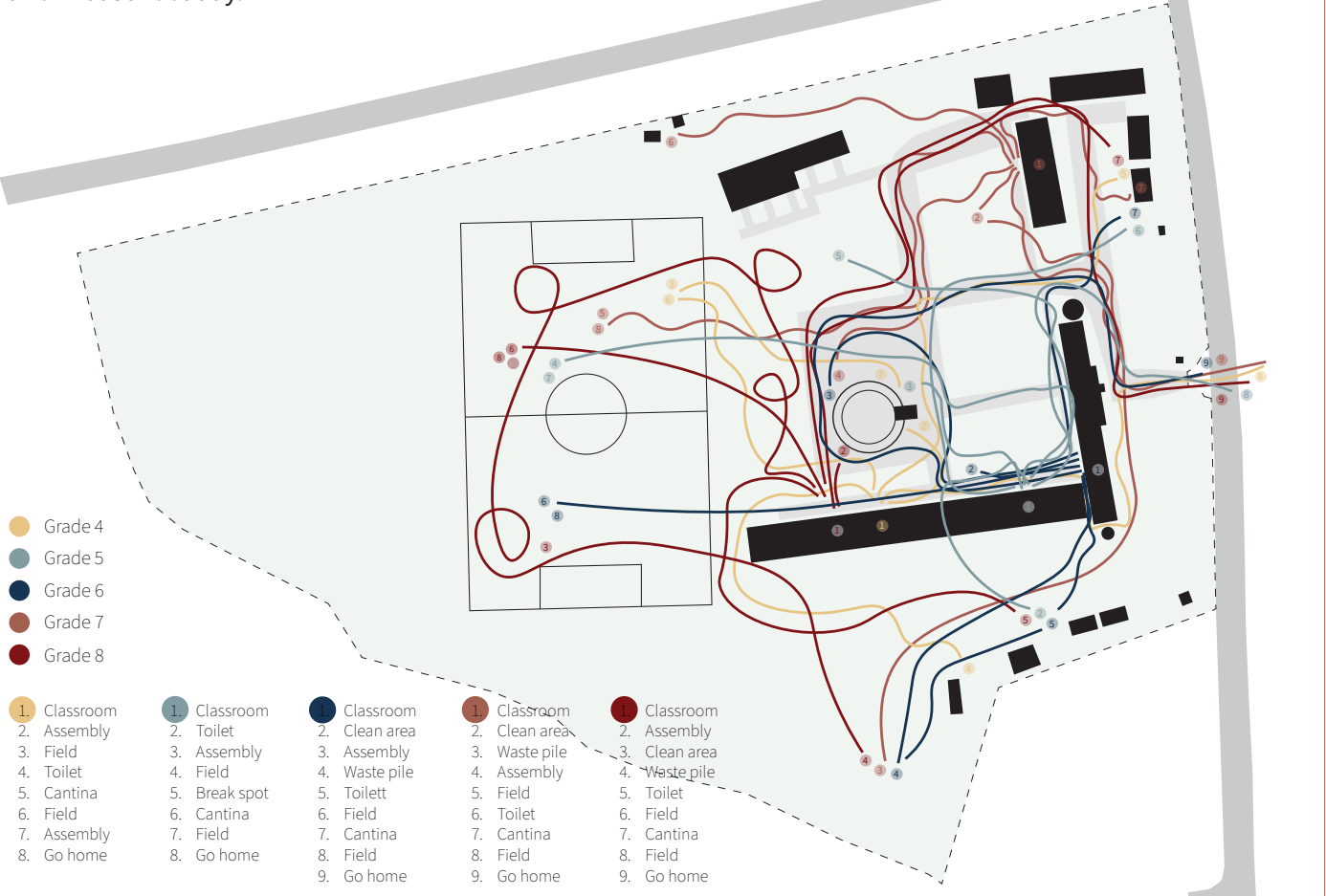


Drawing exercise: decorating designs



Walk and talk: a day in the life of a learner

Grade by grade walked through the school yard to show how they moved and what they did during a normal school day.



Workshop 5

WHAT

Method:

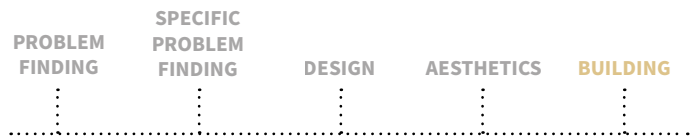
- Prototype building - acoustic boards

Purpose:

- Include the children in the building process, and also increase the possibility of them continuing the work later on.

Game:

- Dansstopp
- Under hökens vingar
- Surprise: Fiskedamm



ANALYSIS

- Building and being practical with the children worked very well! We noticed that they are used to it and were excited about it.
- A continued work with these prototypes, when we have left, is clearly possible. It can be made both in and outside of school hours.

PROTOTYPE BUILDING

Aim

- Same as above

How

1. Divide them into 4 groups: 2 older groups + 2 younger
2. Older groups: weaving and hammering tires
3. Younger groups: weaving hyacinth

Material

- Wooden boards
- Striped old tire
- Dried water hyacinth
- Hammer
- Nails
- Water dunks with water

Preparations

- The wooden boards are good to prepare beforehand
- Dry the water hyacinths

REFLECTIONS

What worked

- Both weaving the hyacinth and weaving and hammering the tires on the wooden frames worked really well! The children seemed used to working with this, or at least similar tasks.
- They were good at cooperating. Everyone got to be a part of the work.
- It worked well with dividing groups based on grade.

What did not work

- The weaving of the water hyacinths took very long time.

Unexpected

- The children's skills in these practical tasks.

Acoustic boards

The idea of the acoustic boards is shown below. We wanted to create these boards to decrease the sound of the rain and of voices in the classrooms. We also wanted to do it with a simple and frugal design, so that they can continue the work themselves.



Two finished frames. The waterhyacinth weaving were made with help from Zingira

Adding tires to the wooden frames

Wooden frames had been prepared so that the older children could weave and nail striped tires to them.



Weaving waterhyacinth

The younger children weaved dried waterhyacinth, that we later could nail on the other side of the boards.



Process thinking and documetation - our own skeching workshop

WHAT

Methods:

- Creating a mind map from brainstorming past workshops to identify group priorities.
- Sketching Workshop: Draw for 5 minutes, then rotate sketches with design task for each of the participants.

Purpose:

- Getting an overview of where we stand as a group and what is important for us as individuals.

ANALYSIS

- We gained more knowledge about how everyone sees the project going and where the preferences and importance for each of us lies.
- We got new ideas for the direction of the project.
- Getting to be playful and do some sketching is always a good idea in a creative project!

Brainstorming Mindmap

