# The Resilient School

McGill University School of Architecture Winter 2016

Prof. loek Türeli Undergraduate Year

### The Resilient School

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### Studio

### Winter 2016

The programmatic objective in this studio was to create a school for Syrian refugee children in Turkey: a "resilient school." The concept of "resilience" refers to the ability to deal with change, to maintain operation and functionality and to maintain a positive approach in the face of challenges. In the psychology field, it refers to an individual's ability to cope with adversity. In the urban and architecture fields, resilience refers to the ability of a building to sustain itself despite challenges such as climate change, disasters, and terrorism/war; emphasis is placed on sustainable practices.

In the first version of this studio during Winter 2015, students developed approaches for the camp as well as for the community; projects that relied on prefabrication as well as local sources, labour and user participation; they designed projects that are environmentally, climatically, and culturally sensitive. A key idea was that the school they designed is a "type" school; one that can be replicated according to need. Thus, the students speculated on how its iterations will be placed in relationship to each other in a given camp; and how they may share resources as a network of elementary schools. During the research phase of the project, the studio was visited by Al-Salam School's founder and director, and the representatives of the Montreal-based Syrian Kids Foundation, who informed us of their difficulties with building design and contractors. Inspired by this, the second and final version of the studio addresses the educational needs of urban Syrian refugees in Turkey by redesigning the Al-Salam School, on the same site that the school currently operates.

Most research on architecture and education has focused on physical factors such as air quality, lighting, noise, durability of materials and assessing the effects based on absorption by students of delivered material (e.g. student performance on tests) ignoring the social life enabled by buildings. However, the programs, and physical layout, of schools are influenced by pedagogical ideals which change over time. Newer approaches in research on architecture and education recognize the quality of spaces, and architecture as an actor along with teachers and students. Accordingly, school is not just a space of scholarly knowledge transmission but inclusion

and exclusion, identity formation and other social interactions and processes. Children's possibilities of participating in social life are framed by the architecture of their schools. Physical space is not simply a container but a "learning environment." Hence, the notion of the "third teacher" refers to the potential of architecture to support pedagogical intentions.

Al-Salam School was only an inspiration and a beginning point; that is, the students were not working for this School nor its NGO, Syrian Kids Foundation. The students were expected to develop an expertise in and critical perspective on educational institutions, spaces of learning, innovative practices in school design, and the educational needs of traumatized children, and apply best practices to their vision of the "Resilient School." The term was divided into three phases of work. Phase I consisted of field research in a local primary school, as well as conventional precedent research. Phase II consisted of design work in teams for a speculation on the construction of Al-Salam School in its entirety; a scheme encompassing primary, middle and high school. Finally, Phase III consisted of individual design development of the primary school within the larger institution.

### Phase I

### Spatial Analysis: Developing Analytical Skills

The first phase of the studio consisted of studying and learning to analyze school buildings through analytical drawings, which could then be adopted in the development of new designs in the following stages of the design project.

The studio began with a one-week study of a historic neighborhood school and the analysis of its building dating from 1908. The students spent a full day at Roslyn Primary School in Westmount, from the drop-off of the students in the morning until their departure at the end of the school day. They split into five groups to observe different levels and specialized classes. In addition to observing how classrooms are used throughout the day and how students move in and across the building, they also talked to teachers and administrators about which spatial features of the building worked and what could be improved. Back at the School of Architecture, they presented their observations according to five frameworks: 1) Safety and Security, 2) Physical Comfort, 3) School as City, 4) Formal Spaces of Learning, and 5) Social Spaces of Learning (Recess). The following pages present selected drawings from each of their group presentations.

This study was followed by another one-week assignment of individually-completed precedent presentations of contemporary schools which reflect the latest approaches to learning environments. The students produced original drawings analyzing their case studies using the frameworks employed in the analysis of Roslyn School and compiled a booklet of precedents for general studio reference.



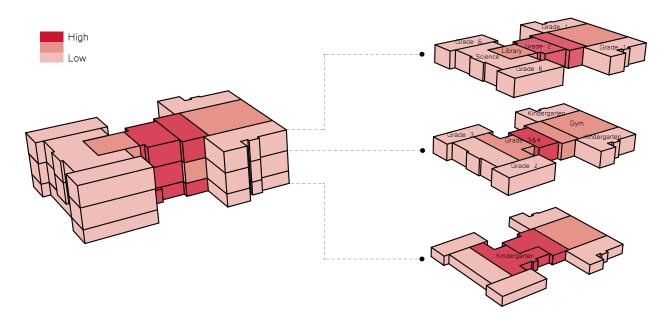
Roslyn Primary School in the Montreal neighborhood of Westmount.

### Safety and Security

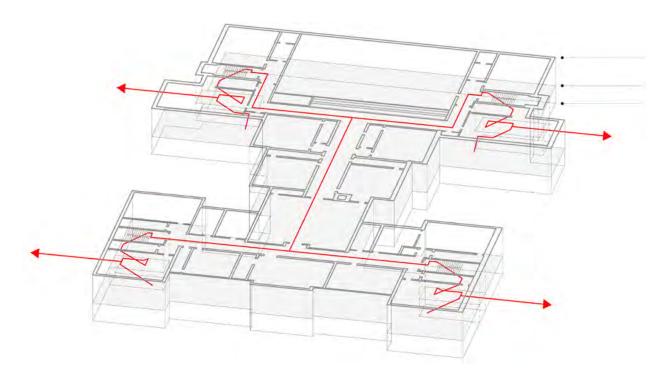
Eryn Maclellan, Maryam Nasr, Yuting Wu



### Safety Risk



### Evacuation Phase 1



### Evacuation Phase 2

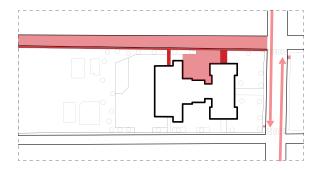


After evacuation of the school students gather in the school yard and in cases of extreme weather take shelter at a nearby chruch.

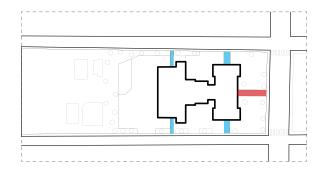
### School and the City

Myriam Assal, Övgü Nurözler, Katie Peruniak

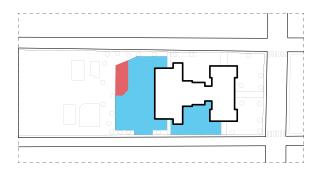
### School in the Neighbourhood



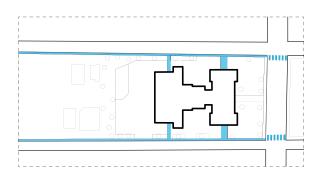
Vehicle Circulation



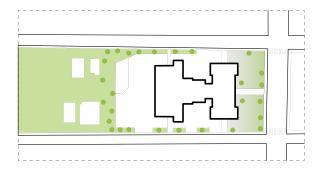
Entrances



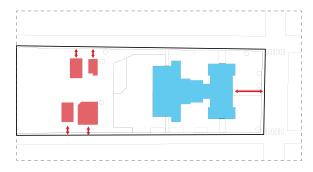
School Yard



Pedestrian Circulation



Privacy

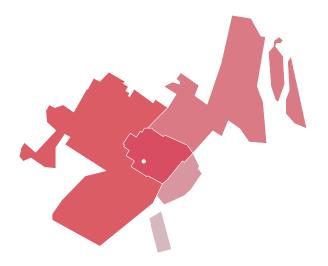


Institutionality

### School as Community

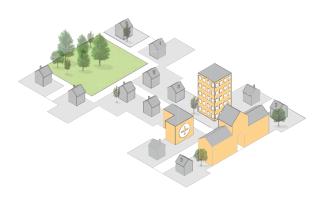
### Kindergarten Junior Grades (1-4) Senior Grades (5-6) Administration & Staff Specialized Classrooms Services & Maintenance

### Student Distribution



 50% Westmount
13% NDG/CDN
 8% Saint-Henri
 6% Ville-Marie
 4% Ville-Emard
1% International

### School as City

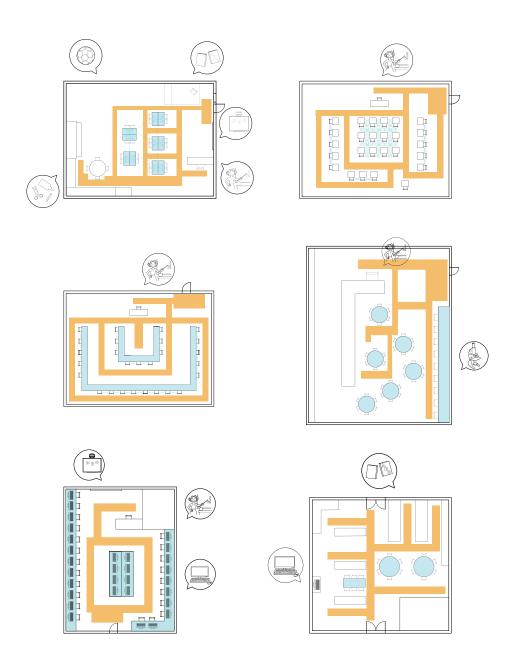


An administration that acts like town hall, health services as a hospital, classrooms as houses, and public spaces accessible to everyone, like the gym.

### Formal Spaces of Learning

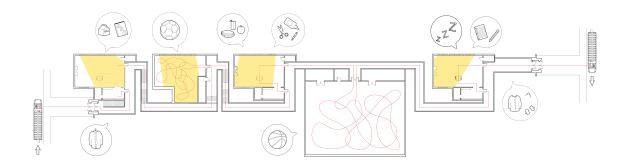
Olivier Ducharme, Meaghen Dionne, Laurie Charron-Lozeau

### Classroom Layouts

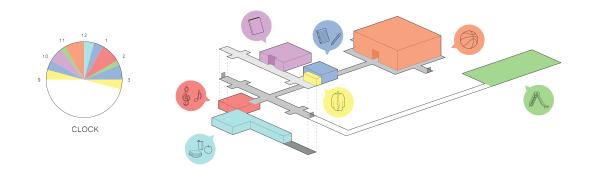


Top Left, Clockwise: Kindergarten, 3rd Grade, 6th Grade, Science Lab, Computer Lab, Library

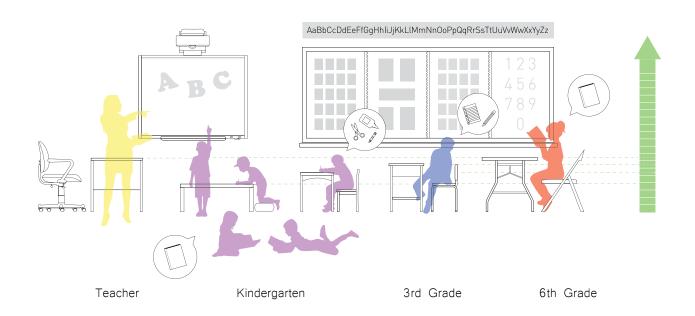
### Kindergarten Schedule Mapping



### 6th Grade Schedule Mapping



### Use of Furniture and Display Spaces



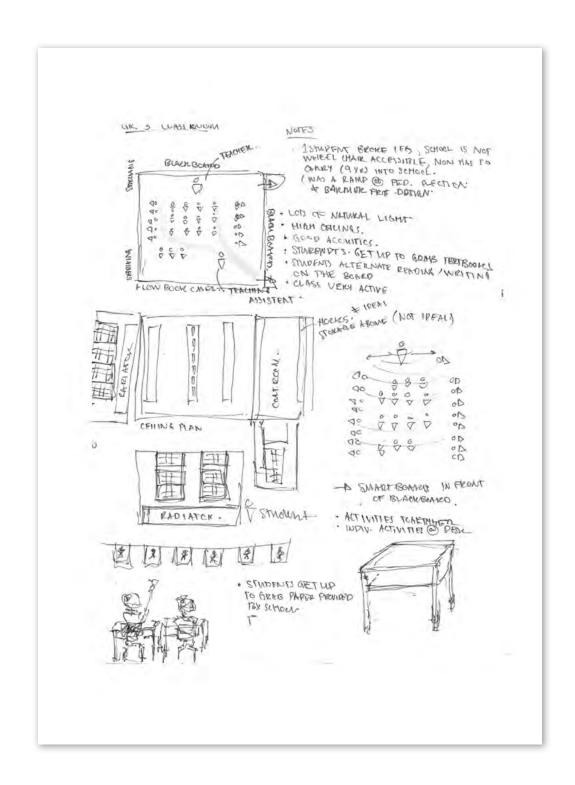
### Site Visit

January 21, 2016





Class outing to Roslyn Primary School.



Student field notes from site visit.

### Phase II

Problem Definition: Conceptual Approaches and Time-Based Design

The second, three-week phase consisted of team-based design work in which students developed architectural proposals for a new facility for Al-Salam School in Reyhanli, Turkey. Al-Salam School is run by the Canadian, Montreal-based NGO, Syrian Kids Foundation, to support Syrian refugee children by providing them with educational opportunities. This school operates from a converted farmhouse surrounded by olive trees. Its building is insufficient for the needs of the school, according to the report of its Principal, Hazar Mahayni.

The students in the studio were asked to redesign the school, to develop massing schemes which provision for separate primary, middle, and high school buildings according to the current model of education in Turkey and current conditions of Al-Salam, and which could be constructed incrementally over consecutive years while the current school-facility on site is still in operation. It was expected of the proposals to be clear and bold improvements on the existing school building, both urbanistically, pedagogically, experientially, and environmentally.

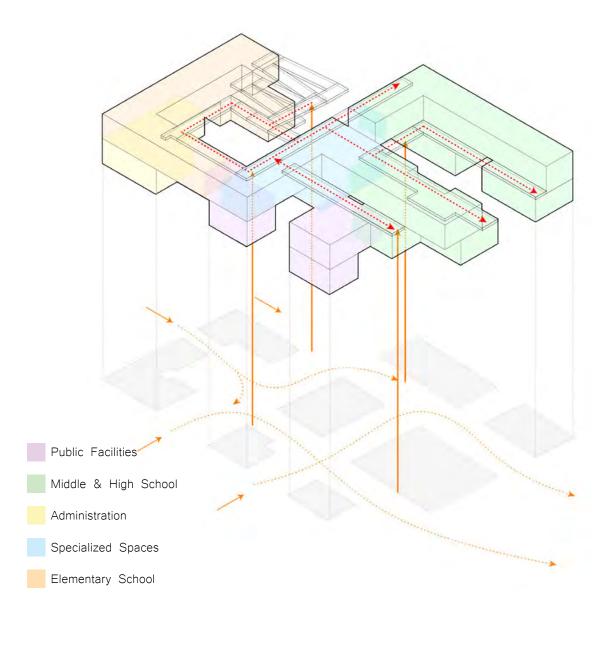


Al-Salam School in Reyhanli, Turkey.

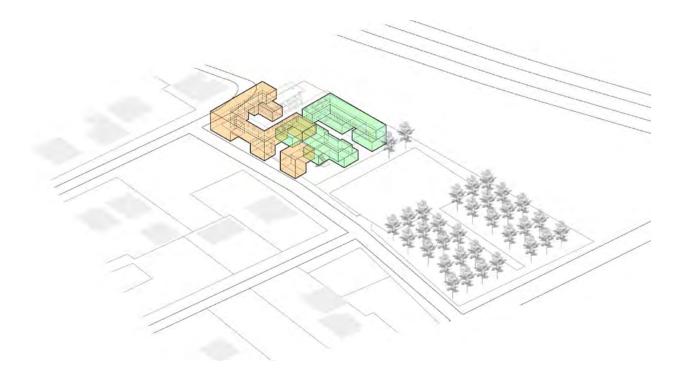
### Scenario 1

Lin Sen Chai, Manon Chiorri, Cyrus Chu

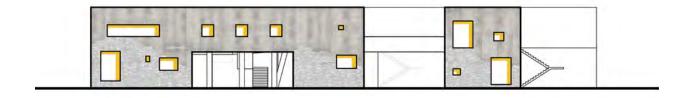
### Massing & Circulation



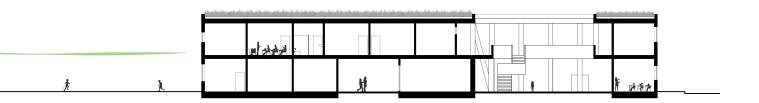




East Elevation



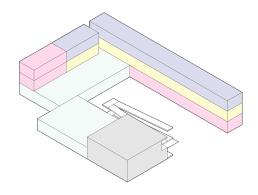
Section, Link to Nature



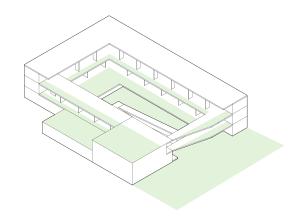
### Scenario 2

Marie-Hélène Lesiège, Sarah Beauchamp Evdokias

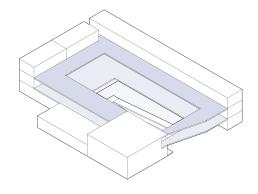
Massing



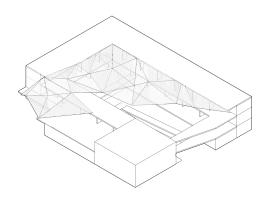
Exterior Spaces



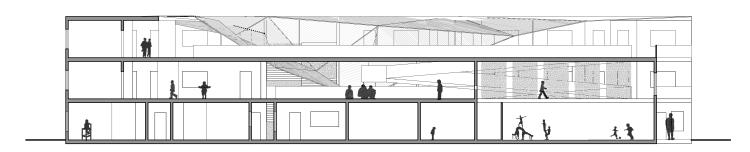
Circulation



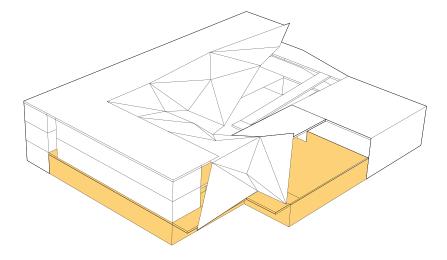
Roof Design



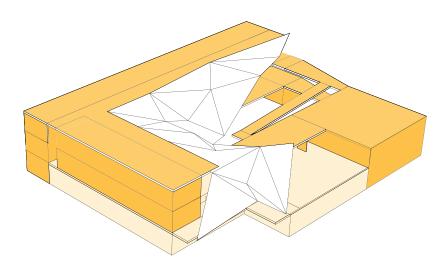
Section



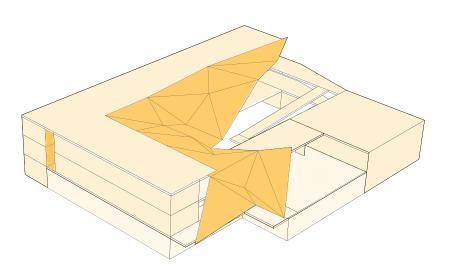
Year 1: elementary school (with roof)



Year 2: middle and high schools, ramp, terraces, support screens



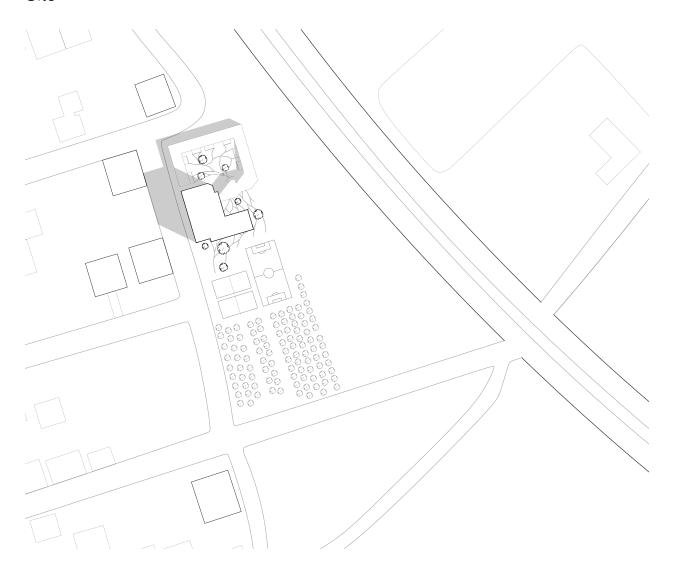
Year 3: steel and rope canopy, ornamental screens, landscaping



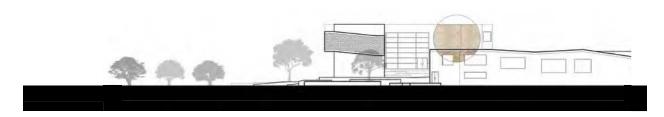
### Scenario 3

Olivier Ducharme, Meaghen Dionne, Laurie C.-Lozeau

### Site

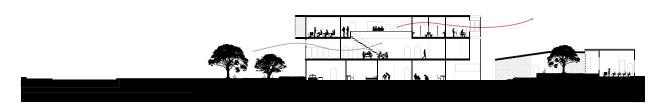


### Elevation (Highway View)



Year 2: middle and high schools Year 1: elementary school Year 3: landscape

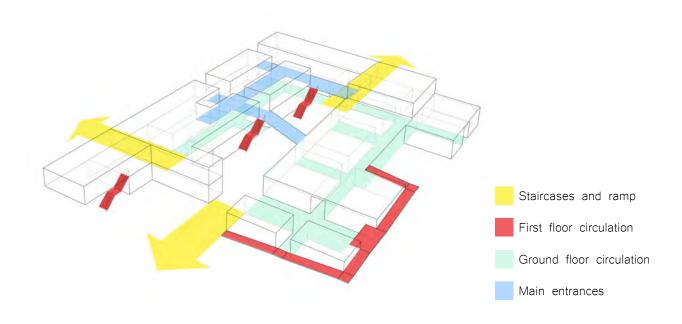
### Longitudinal Section



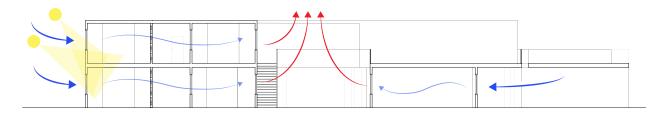
### Scenario 4

Eryn MacLellan, Maryam Nasr, Yuting Wu

### Circulation

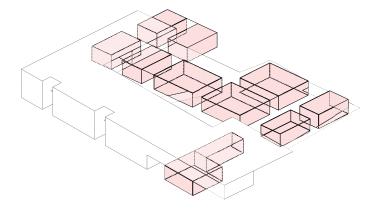


### Ventilation and Light

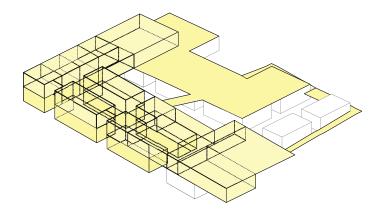


### Transversal Section

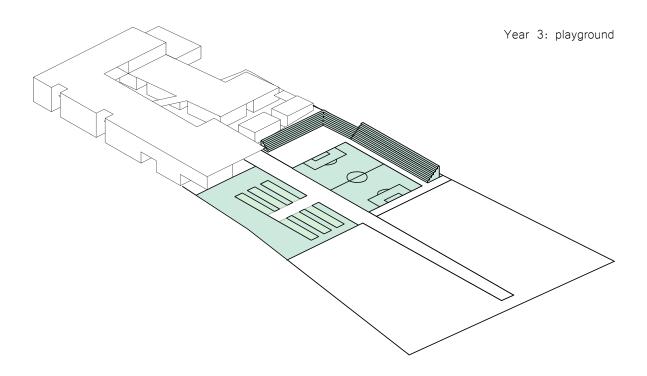




Year 1: elementary school



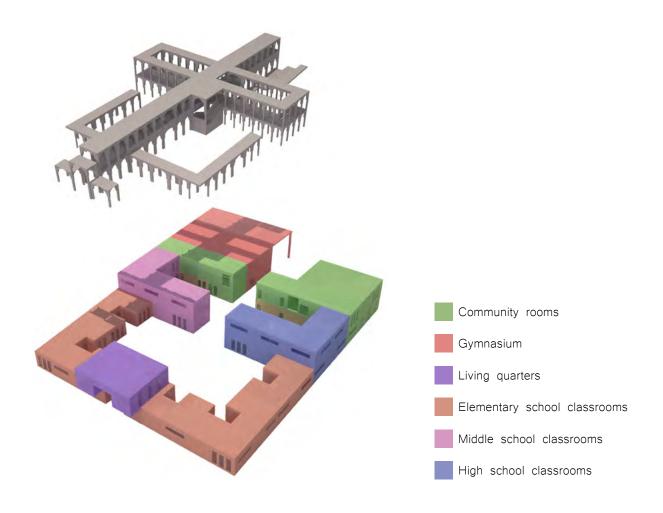
Year 2: middle and high schools



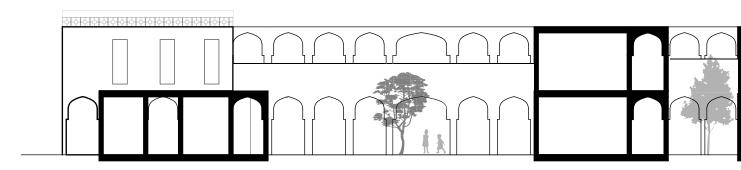
### Scenario 5

Myriam Assal, Katie Peruniak

### Massing



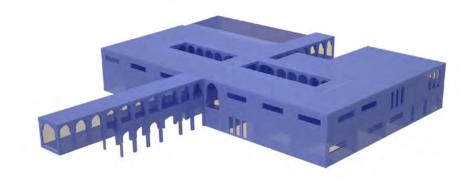
### Longitudinal Section

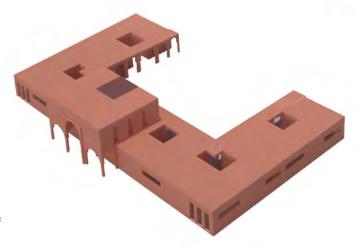


Year 3: demolition of original school and landscaping for playground

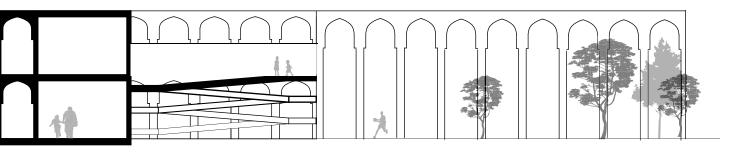


Year 2: addition of middle and high schools





Year 1: construction of elementary school



### Phase III

Decision-making: Material and Spatial Explorations

In the six-week final phase, the students individually developed design proposals for the elementary school component as a self-standing, independent project. As there is no way of knowing whether the middle and high schools will be funded and constructed in subsequent years, students proposed schemes which were able to stand on their own, with appropriate boundaries and landscaping, but which could become part of a larger institution.

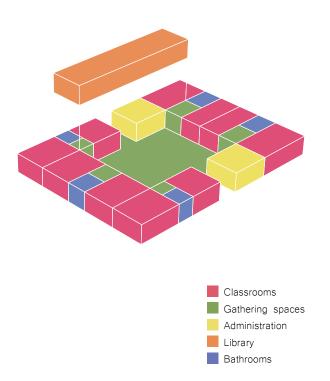
The students were expected to work with the social, economical, technological and environmental constraints of the actual Al-Salam School. For example, elevators were not allowed for cost reasons but designs had to follow Universal Design principles. Mechanized cooling and heating systems were not allowed for cost reasons, and all the designs had to use concrete frame construction system which is the vernacular of the region today and is the cheapest available.

An important part of the project was to produce 1/50 scale models of the designs—these models had removable roofs and split open sectionally to show classroom layouts and connections across spaces. Overall, the students were expected to maintain a critical perspective on educational institutions, spaces of learning, innovative practices in school design, and the educational needs of traumatized children in their imagining of the new Al-Salam Primary School.



Physical model in progress: students produced 1:50 scale models.

### Programmatic Diagram



### Myriam Assal

Since the the beginning of the refugee crisis only five years ago, very little space has been dedicated to the Syrian newcomers' culture and education in their host country. This cultural home will act as both a school and a community centre in order to promote the cultural and historical heritage of Syria. Open to everyone, both Syrians and Turks, it will allow children from kindergarten to high school to receive a Syrian education. Moreover, people will be able to hold activities in this space. The main concept behind the planning of the space was inspired by the configuration of the "Souk," which was located at the centre of a given Arab city. The Souk consisted of a long and narrow exterior hallway that held the market and branched out onto different gathering spaces. It generated a vibrant public atmosphere and was therefore considered to be not a historical and architectural place but also a cultural one.



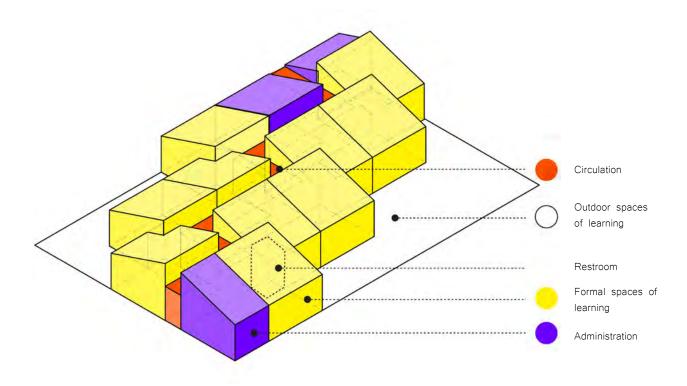
### East Elevation



### Longitudinal Section



### Programmatic Diagram

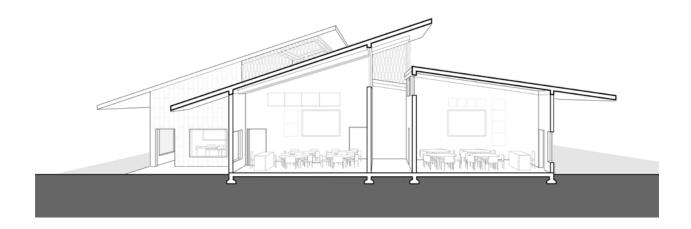


### Sarah Beauchamp Evdokias

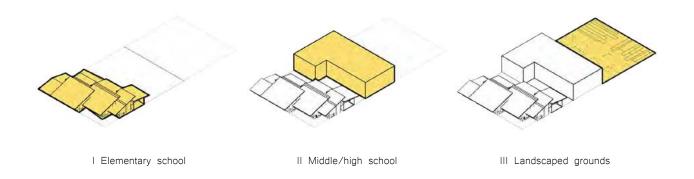
The project proposes an environment for Syrian children to rebuild the localized network they have lost or left behind. As such, the school is designed to provide an opportunity for processes of identification and place-making to occur. Each student operates within a close-knit network organized around their "home room." The small scale enables the child to create her world, without the intervention of negative outside forces, and progress in an environment that is properly theirs. Each classroom has direct access to an outdoor play area, shared by children of the same grade. From there, one can access the greater playgrounds. Thus, there exists a gradient of interaction, promoting safe socialization in a setting that is akin to home. The classroom layout itself is flexible to a variety of pedagogical activities so that the instructor can tailor the curriculum to specific needs.



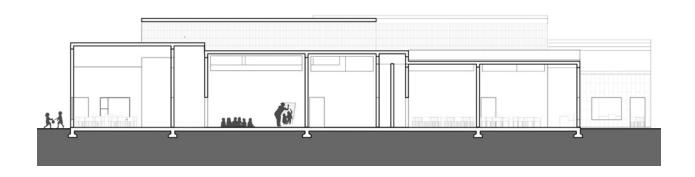
### Transversal Section

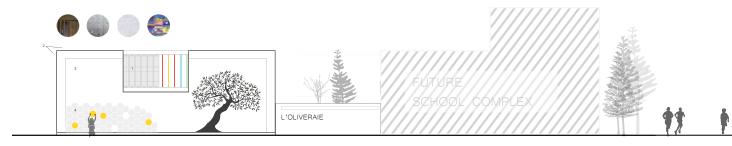


### Building Phases



### Longitudinal Section

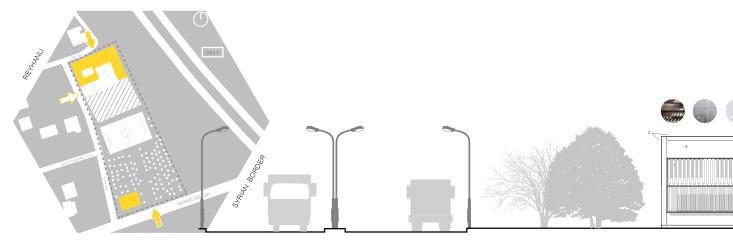




Phase I: Elementary school

Phase III: High/middle school

Phase II: Play yard



Site plan

Humanitarian aid / Refugee influx

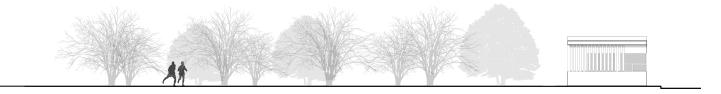
### Lin Sen Chai

## L'Oliveraie School, located in Reyhanli, Turkey, is at the epicentre of this migratory crisis. With the Cilvegözü border crossing only ten kilometres away, the school is at the crossroads of migrants, humanitarian convoys, and even jihadis. Hence, within the apparent state of chaos, there is a need to provide for a safe haven for the children, even temporary; a place of tranquility and stability in which the can rest and learn. The proposed school emphasizes outdoor and hands-on learning in order to help the children cope with their daily struggles. The olive grove and the expansive green-roofs housing endemic flora connects them to nature, allowing them to learn from the olive and honey harvests. L'Oliveraie School is a proposal for a placid and serene environment in which children play, laugh, grow, ultimately learning to become children again.

### Model 1:50

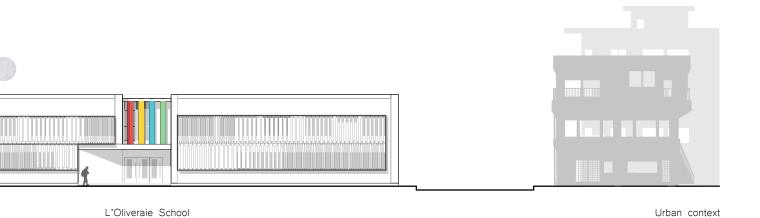




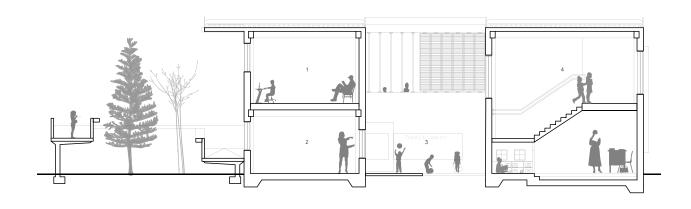


Existing olive grove

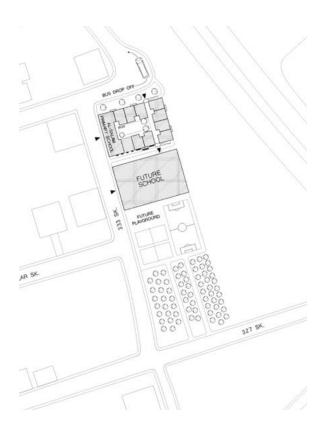
Phase I: Honey and olive oil shop



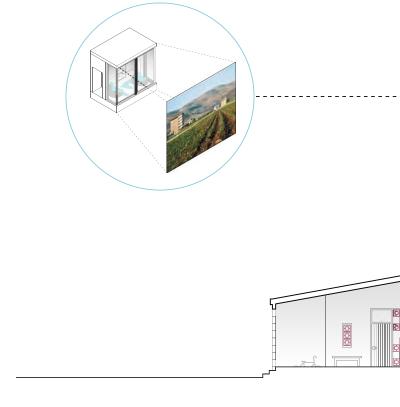
### Transversal Section



- 1 Library
- 2 Kindergarten
- 3 Outdoor classroom
- 4 Lobby



Detail - Viewing Pod

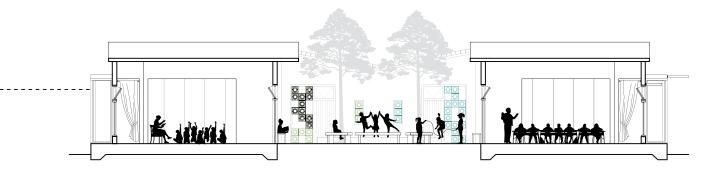


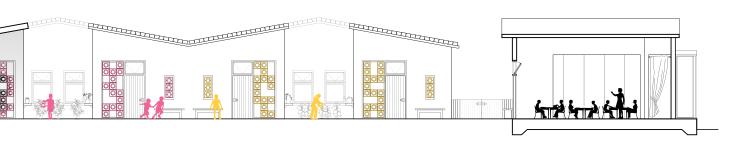
### Laurie Charron-Lozeau

The Al-Salam Primary School aims to make Syrian children feel at home in this period of unrest and instability. The U-shaped plan creates a sense of security and intimacy while establishing the school community around a central courtyard. There are no hallways: Every classroom opens up directly to the exterior, allowing an instant connection to nature and to other children. Identified by a specific lively color, each academic level corresponds to a house-shaped unit split into two classrooms with shared spaces, including an edible garden and a viewing pod. Intended for children to use at any moment, these viewing pods, or relaxation areas, allow children to calm down while contemplating the beautiful Syrian mountains, reminding them of home.



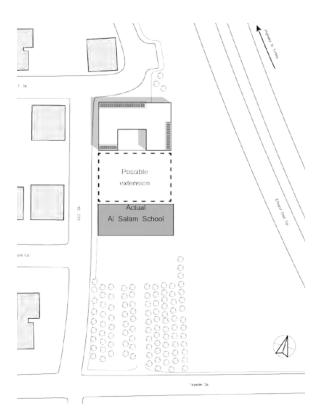
# Transversal & Longitudinal Section





View into Courtyard

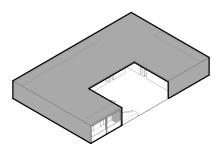




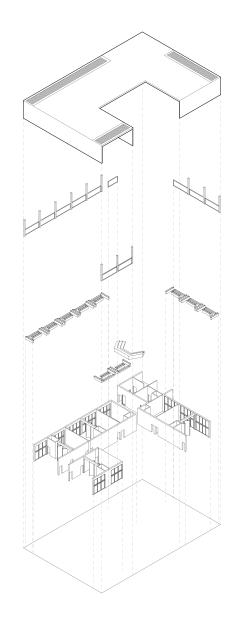
# Manon Chiorri

Syrian refugees fleeing their country are seeking shelter from the trauma experienced in their home. After the journey that led them to Reyhanli, it is important that they take root in their new home. The project invites children to create their own environment and community within the school. It is important for them to create a strong link between the place they are in and their community to counter the stigma they face. By making community a main component of the project, the school allows two cultures to come together and shape a new identity. Each component of the school is designed as a learning tool and engage the students to interact with one another and with nature. Using local materials and connecting with the surrounding landscape, the school brings together two communities in order to make the school a welcoming place. The duality of materials and the massing of the building create a sanctuary that revolves around the child's development in a multicultural context.

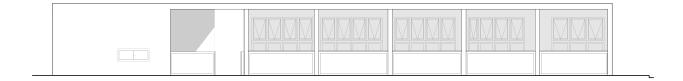
#### Envelope - Concrete Shell



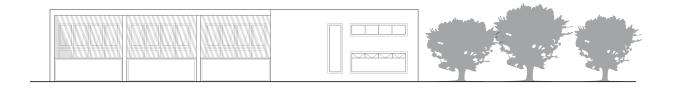
Design Diagram



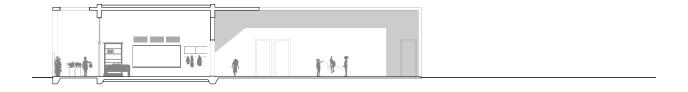
### North Elevation



### South Elevation

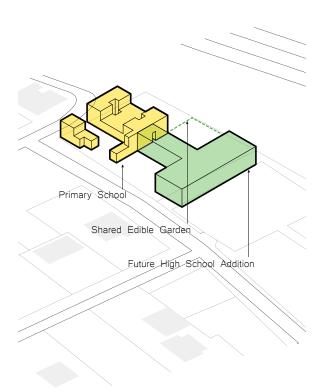


### Transversal Section



# Model 1:50

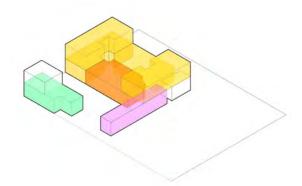




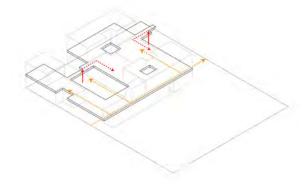
# Cyrus Chu

Living in refugee camps that are isolated from the larger Turkish society, children already traumatised by war may feel alienated and insecure. A new primary school for the existing Al-Salam school intends to promote multiple levels of interaction within an open environment that reconciles with concerns of privacy, security and domesticity. It integrates school with city and promotes students' interaction with teachers and citizens, rather than merely among themselves. In the first small courtyard, students have a direct view into the clinic and café that serve the public. This observation can also be a form of learning. The operable partition walls and edible gardens promote intra- and inter-grade communication. Students may also choose to have more intimate discussions on the patios which are accessible from their classrooms. Lastly, the second floor open-air art studio that opens directly to the city elevates the scene of their new home and suggests to them a promising future.

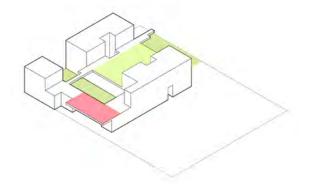
#### Programmatic Diagram



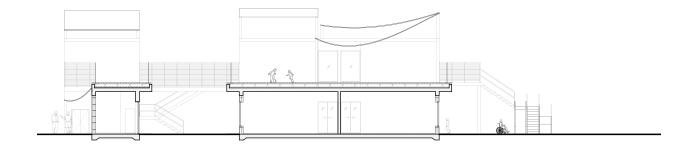
### Circulation Diagram



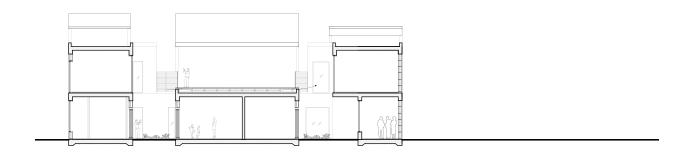
#### Outdoor Spaces



# Longitudinal Section



Transversal Section

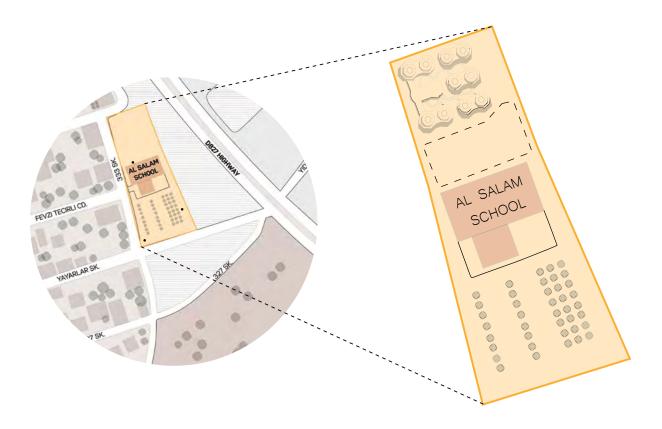


View of Building

View from Courtyard



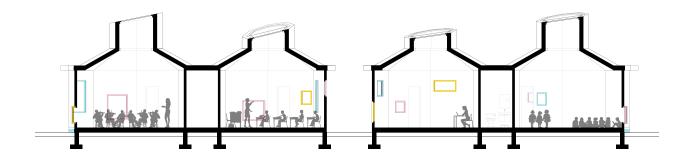




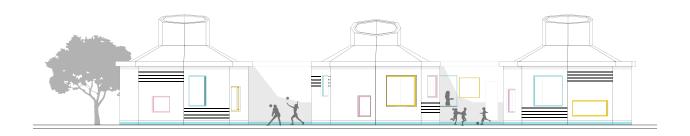
# Meaghen Dionne

Symbiosis relates to the presence of mutualism between two species; relationships between two organisms that prove to be beneficial for both parts. In such systems, the exchange of services and knowledge constitute an important asset of their survival. The result of collaboration is more substantial, and projects a more positive effect on each parties. Furthermore, the strict limitation of symbiosis to biological notions reveals to be inappropriate. One can and must apply the concept to broader uses. The merging of different elements creates a space of sharing and communication in the unknown and unset: depth therefore emerges. When architecture enters into a symbiosis, it allows information and form to become one.

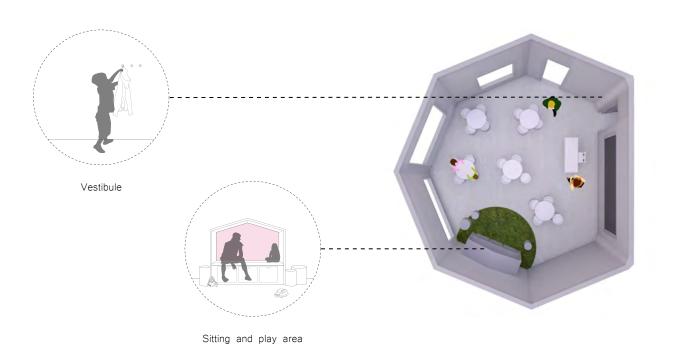
# Transversal Section



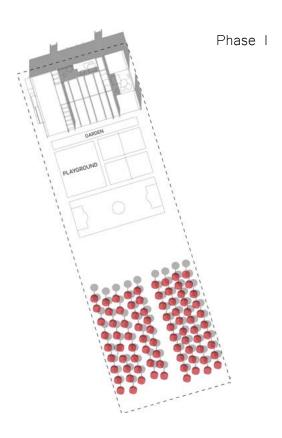
# North Elevation



# Classroom Module

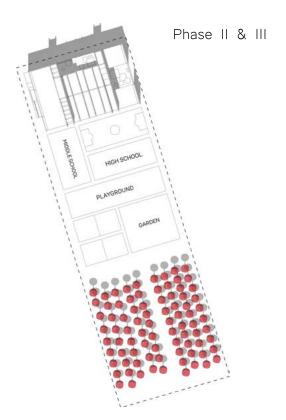




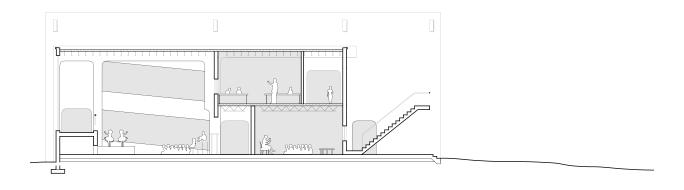


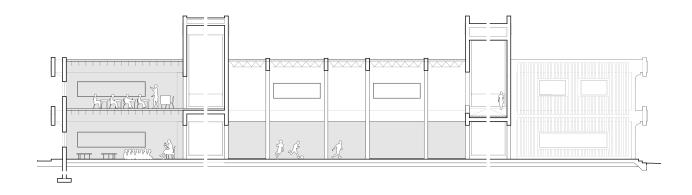
# Olivier Ducharme

The project offers an ascending experience that complements the learning journey of the students through an architecture that mimics the surrounding moutainous landscape in order to give a sense of empowerment to the students as they progress through the curriculum. The program is laid out in a linear fashion that slowly redirects the children towards the mountains that separate the borders of Turkey and Syria. Gathering spaces formed in the valleys of the project's formal articulation embody the protectiveness of the mountain while framing its most interesting views. Verticality is explored in the circulatory spaces to promote openness and relations between multiple school levels. A centralized ramp is designated as a key feature of the proposal. It weaves through the building to offer universal access and an equal experience to all users, and offers plateaux to contemplate the progress one has made in their climb.



# Section A & B





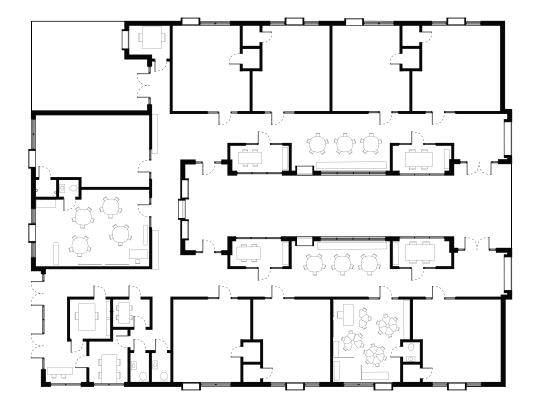
# Model Detail



### Plan

#### Program

- 1. Reception
- 2. Office
- 3. Teachers room
- 4. Nurse room
- 5. Resource room
- 6. Bathrooms
- 7. Work room
- 8. Open space
- 9. Courtyard



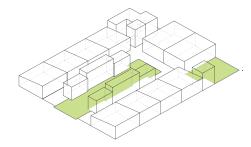
# Marie-Hélène Lesiège

The school wants to give students opportunities for learning and growing, by providing them with various spaces for learning, whether in groups or alone, inside or outside. It combines play and work by embracing visual and physical connectivity so that learning can happen everywhere. The functional arrangement fosters collaboration between groups as classrooms are clustered around shared spaces. The improved classroom design is composed of three different spaces of learning, from the traditional classroom, which is more suited for conventional classes, small rooms for individual experiences or tutoring, and open spaces for multiclassroom gatherings or art classes. The spaces formed by the various pedagogical models generate a U-shaped plan, with an inner courtyard that allows light inside the school. Alcoves located in every classroom and scattered around the building provide quiet spaces where children can read or relax apart from the others.

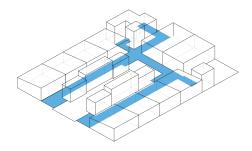


# Programmatic Diagram

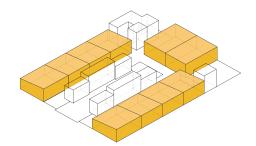
Outdoor play spaces, edible gardens



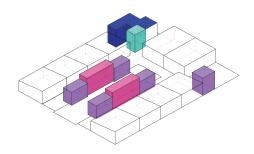
Circulation



10 classrooms (40 students per class)



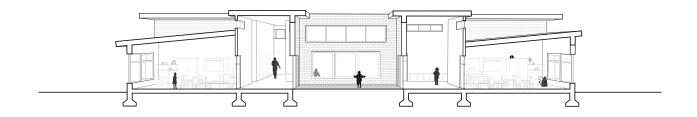
Administration and teachers' room



Longitudinal Sections

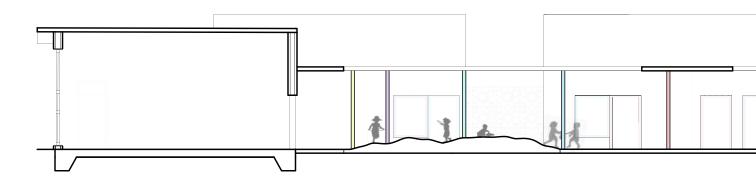


Transversal Sections



#### Programmatic Diagram





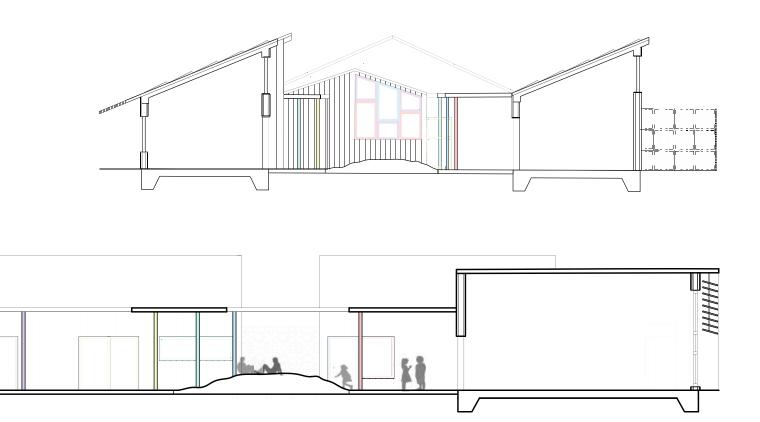
# Eryn MacLellan

The conflict in Syria has affected the lives of countless children who have been subjected to trauma. Fifty-one percent of the Syrian refugee population in Turkey are children who were forced to abandon their homes and live in uncertainty. The school intends to return a feeling of home back into the lives of the children. The project began with a drawing done by a Syrian child who expressed the shattering of Syria during the war and hope for a united Syria in the future. Some children expressed gratitude for Turkey, as it was able to offer them a second home. The school aims to reunite the Syrian community through a centralized scheme that will bring together people of different ages and out the Syrian children on equal ground as they have lost varying years of education. An open scheme encourages social interactions outside of the classroom and within the community. The aim is build a home, in all senses, for Syrian children in their new environment.

### Perspectival Section

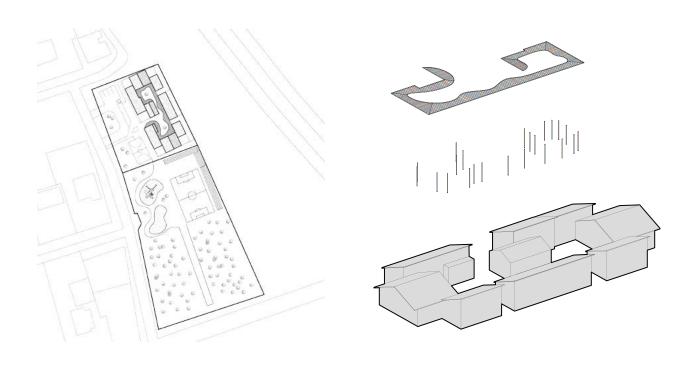


# Transversal & Longitudinal Section

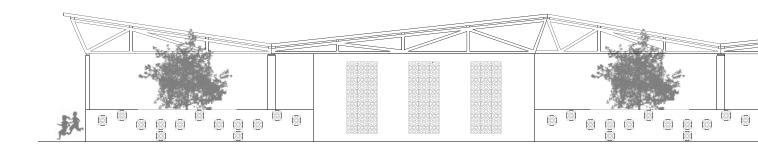


Site

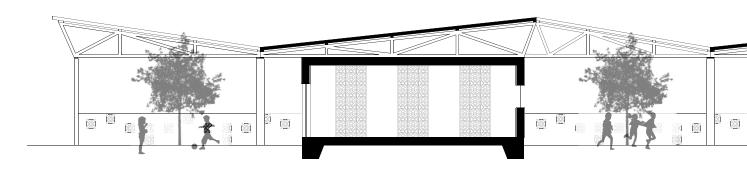
Canopy Structure



#### East Elevation



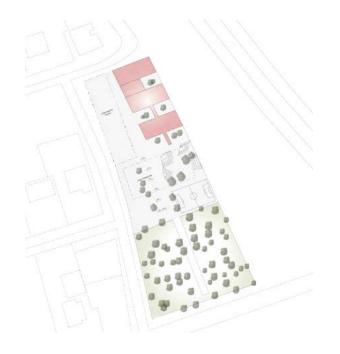
# Longitudinal Section

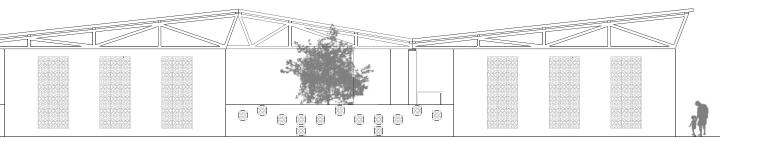


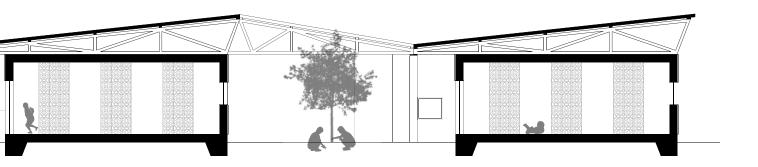
# Maryam Nasr

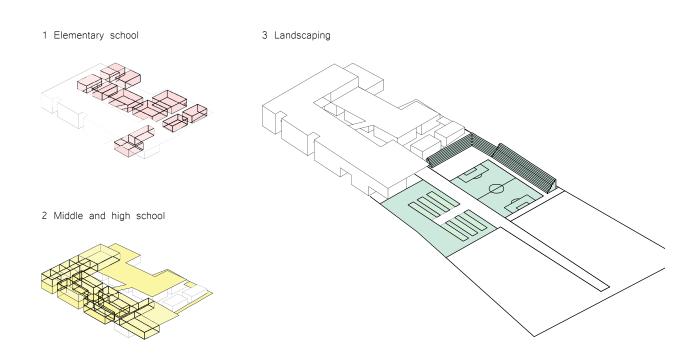
The new Al-Salam school aims to create a space that promotes a feeling of safety by establishing a visual relationship with the landscape and with other classrooms so that children can be aware of their surroundings and feel safe. This idea was achieved with the use of a modular system. The plan consists of clusters of two classrooms to break down the scale and create intimate communities of students within the larger school. Between the classrooms units, individual gardens and outdoor classrooms provide alternative space for education and play. The classrooms extend toward these gardens with a series of door openings, to create a continuous flow, blurring the boundaries between what is eduction and what is leisure. These intimate outdoor spaces are defined with green walls that can be cultivated and be personalized with a variety of local plants. These green walls give a playful aesthetic to the shool, as they change character with the seasons.

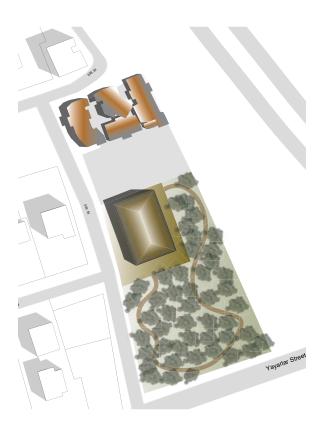
#### Site Plan



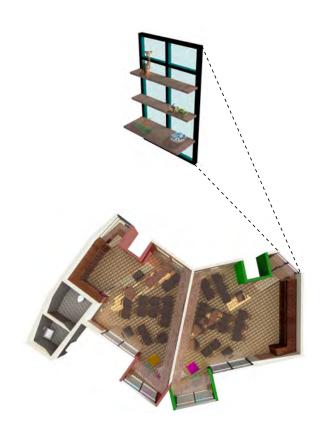








#### Classroom Module



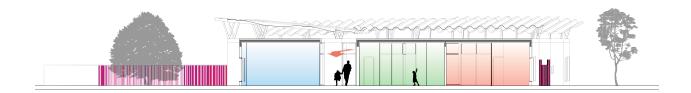
# Övgü Nurözler

The design of "Mashaal School" weaves contemporary school design theory into the traditional characteristics of Eastern Mediterranean cities: each classroom breaks the boxy mold of a standard classroom and sculpts a complete school compund through its own rules of agglomeration. The sculptural quality of the final compound expresses the nooks and crannies found in local cities like Hatay and Aleppo, where these features traditionally function as shading devices for summer. One remarkable feature is the corrugated metal roof, which allows the circulation in wet Reyhanli winters and cools down classrooms in summer as heat absorbers and wind tunnels. The whole structure functions both as an efficient school and a playground through its sculptural features, which define spatial functions in each classroom module and create outdoor spaces that allow access to the roof.

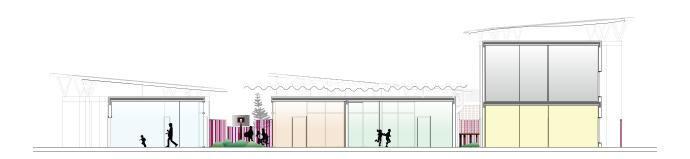
View from Courtyard



### Transversal Section



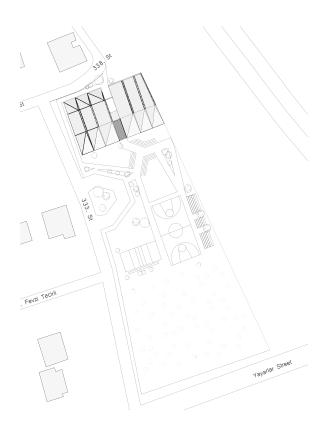
# Longitudinal Section



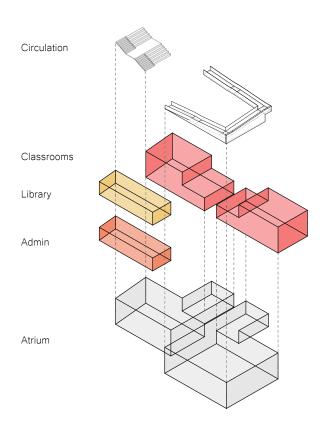
View of Entrance



#### Site



#### Programmatic Diagram



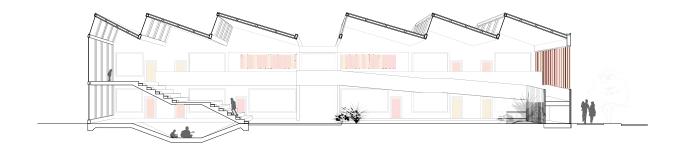
# Kathryn Peruniak

Focusing on the integration of culture and education, the main goal for the school in Reyhanli is to foster a safe space for learning as well as for celebrating Syrian heritage and culture. The school will be a place for Syrian students and the community to interact and keep traditions alive. Two key features in the Syrian culture, the mosque and the souk, provided inspiration for the school's planning. These public architectures gave way to the concepts of spaces for gathering, places for interactions, and areas of guided procession. Architecturally, this inspired the ideas for the central atrium, guided circulation and open-air, covered environments. The needs of the potentially traumatized children who will attend this school had to be considered as well. The central atrium provides a safe and secure play area, and the generous interior glazing creates ongoing visual connections through the school.

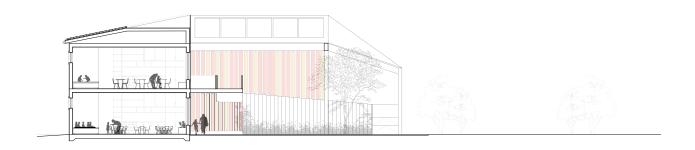
### View of Ramp



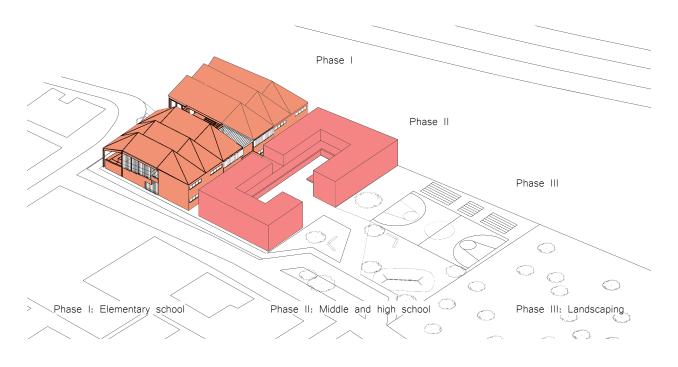
# Longitudinal Section



Transversal Section

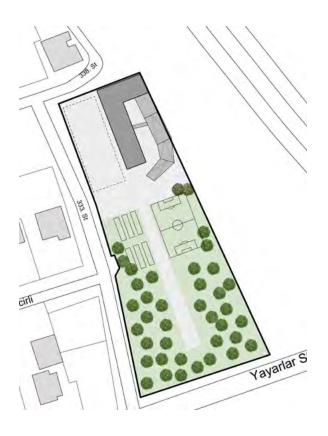


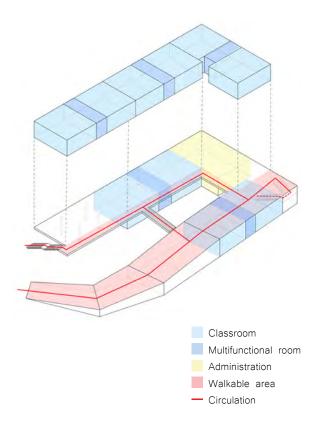
# Building Phases



#### Site

#### Programmatic Diagram





# Yuting Wu

The wars in Syria have forced the Syrian people to abandon their homes (fifty-one percent are children). These children have to live in uncertainty and don't have any chances to play in safe environments. The proposal aims to return a sense of home to the children, to develop the notion of home as a playful space which will encourage childreen to find their childhood. The concept is to integrate the playground with the architecture in order to transform the whole building into a learning/play space and maximizing the actual play area of children. Colours are also used in the windows to create a happy facade. The school allows children to play and relax in a safe space which is both enclosed and opened.

# West Elevation



# Transversal Section



View of Entrance



# Final Reviews

April 14, 2016





Olivier Ducharme, Övgü Nurözler





Lin Sen Chai, Cyrus Chu

# The Resilient School

A catalogue of student projects from the Winter 2016 second year (U2) architectural design studio at the School of Architecture at McGill University.

#### Studio director

Prof. Ipek Türeli

#### Students

Myriam Assal, Sarah Beauchamp Evdokias, Lin Sen Chai, Laurie Charron-Lozeau, Cyrus Chu, Manon Chiorri, Meaghen Dionne, Olivier Ducharme, Marie-Hélène Lesiège, Eryn MacLellan, Youssef Nabulsi, Maryam Nasr, Ovgu Nurozler, Kathryn Peruniak, Yuting Wu

### Guest critics at midterm reviews

Greig Crysler (UC, Berkeley), Courtney Posel (Fichten Soiferman et Associés)

### Guest critics at final reviews

Clément Bastien (BBBL), Gavin Affleck (Affleck de la Riva), Alessandra Ponte (UdeM), Martin Bressani, Terri Peters, Gina Al-Safadi (Syrian Kids Foundation)

### Acknowledgements

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The studio catalogue has been compiled by Karlo Trost.



The students of the Resilient School studio with Prof. Türeli after the final reviews.