Finding Intersection between School and Community

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Abstract

This thesis seeks to create an architectural response for learning that gathers community. A school and community center are explored through the interaction at public and private zones, and day and night operation. The thesis develops a propositional response to the dualities through material, light, and scale.

A particular focus within the study of light is the effort to minimize solar gains while improving daylight and view to the outside that is challenging in hot climates, such as in Jeddah, Saudi Arabia.
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# Table of Contents

 Cover Page  
 Abstract  
 Acknowledgement  
 Table of Contents  
 Introduction  
 Design Concept  
 1. Community Space  
 2. School Space  
 Project Drawing  
 1. Site Analysis / Plan  
 2. Floor Plans  
 3. School Entrance  
 4. Curved Wall Study  
 5. Art Studio  
 6. Library / Courtyard  
 7. Transition Wall  
 8. Light Intensity & Concrete  
 9. Interior Perspective  
 10. South Entrance Perspective  
 11. South Elevation  
 12. West Elevation  
 13. East Elevation  
 14. Southern Stairs  
 15. Section through Library  
 16. Structural Differentiation in plan  
 Conclusion  
 References
Introduction

“The trend from living to lifeless cities and residential areas that has accompanied industrialization, segregation of various city functions, and reliance on the automobile also has caused cities to become and more monotonous.”

*Jan Gehl: Life between Buildings*

In recent years, Jeddah, Saudi Arabia, has seen great urban development. Contemporary metropolitan planning has resulted in a lack of open spaces and connection to nature, especially in residential areas. In this thesis I seek to spaces that meet the need for community, to help solve the design problem of placelessness. Jeddah, a city that was once characterized by its unique urban fabric that served outdoor activities, has become today a monotonous city that is full of asphalt and lacking in open spaces. This thesis suggesting a solution for the existing situation.

Schools have great potential for community gathering, because they often host civic functions. Schools should be designed to not only need educational needs, but also meet the needs of the community.
Life

Space

Buildings

Gehl Architects
Design Concept

Community Activity
- Reading
- Celebrating
- Drawing
- Exercising
- Studying

School Spaces
- Library
- Multifunction Room
- Art Class
- Gym
- Classroom
Residential Area
School Building

Existing Condition

Residential Area
School/Community Center

Proposed Condition
The community space is connected to the garden, and is outward directed. The open floor plan creates a vertical connection with multiple floors and multiple activities that the public is welcome to use inside the building. The structure, controls movement and influence the spaces. Lighting plays an important role in displaying the functions of the spaces. Islamic screens have been employed to express the community. Concrete was chosen because it can provide many finishing options.
The school is a space that has little connection to the outdoors. Coupled with a low ceiling height, this creates the mood of inward direction. Wooden floors that reveal the sound of steps and smooth concrete walls that reflect sound will also make people aware of themselves. This will prepare students to be quiet in classroom. The rigid limits movement to prescribed paths, in contrast with the openness of the space. Since there is a lack of views to the outside, daylighting plays an important role in providing a sense of the passage of time.
Project Drawings
Site Analysis / Plan

Existing Condition

Accessibility and Transportation

MainStreet (Hira'a)
Residential Area
Mosque
Parking Lot
Middle-School

Main Streets
Bus Station
Roads
1. School Entrance
2. Library
3. Food Court
4. Chemistry Lab
5. Meeting Room
6. Community Center Entrance

First Floor Plan
Second Floor Plan

1. School Entrance
2. Computer Lab
3. Entertainment Room
4. Classroom
5. Art Studio
Third Floor Plan

1. School Entrance
2. Open Classroom
3. Gym
4. Classroom
5. Art Class
6. Studying Space
School Entrance

“The time experience of the physical spaces of an architecture include the time of day and season with all its subtle variations. The glowing light of sunrise, an aerial blast of light at noon or an orange wash at sunset: all are diurnal celebration via architecture”

Steven Holl: Color, Light, and Time

Sunlight has the ability to create different experiences of a space. During summer, when the sun is high in the sky, the gathering space is at time be punctuated by variable spots of direct sunlight on the floor and walls creating high visual contrast. In general, the overall lighting level is dim in comparison to the outside. Having a different impression of the same space across the days, weeks, and months help students to sense the passage of time.
Summer Solstice
Curved Wall Study

A curved wall reveals the temporal variability of daylight uniquely. It provides different conditions as time elapses. This statement was based on a study of Steven Holl’s Museum of the City, in Cassino Italy.
May 1st - 9:00 am

Aug 9th - 9:00 am
**Art Studio**

“As a consequence of interdependence of space and time, the dialectics of external and internal space ... have an essential impact on the nature of the arts and architecture”

*Juhani Pallasmaa: The Eyes of the Skin*

The Art studio has different requirements than other classrooms. This space is designed to be inspirational and linked to nature. Apertures offer a connection between the interior and exterior and frame the view to allow art students to be inspired by nature. Sun beams create strips of light and shadow that change seasonally, which makes a different experience from day to day.
The library is the main space joining the two halves of this building so it is open from all sides and easy to access. During The Summer, the sun is nearly vertical to the space, which increases heat gain. The skylight is designed to extract heat while letting in light for indoor plants that improve the indoor air quality.
Skylight Detail
The exposed concrete wall has a special presence with light. The wall receives vertical light, that changes the psychological response of the eyes, by creating a contrast between dark and light, and revealing the texture of the concrete. The revealed texture of the wall invites people to touch its surface on their way to prayer.
Light Intensity & Concrete
“Light does more than merely illuminate forms. It reveals and conceals space, creates cues to discover and follow, while unveiling its own charms of radiance or shadow, coolness or warmth, softness or hardness, clarity or secrecy - a capacity to rivet and lure the eye”

Henry Plummer: Cosmos of Light
Wall and Roof Connection
Interior Perspectives
South Elevation

The screen on south elevation emphasizes the sense of time passing, gives the building its character and identity within its setting and makes classroom interiors more animated. The south elevation is made with wood cladding Islamic pattern, used as an external shading element. That the classroom spaces have the benefit of experiencing the sun as it moves through it’s daily path, which altering their experience of the space. The cladding pattern combines with translucent glass to diffuse light and keep much of the heat out.
Every day the building turns into a community center after school ends. Cultural lighting created by a patterned screen for the western entrance, inviting the community to enter the building.

The low sun is a major factor for heat gain, especially in a hot-humid region, so an experimental study was conducted on the model by testing screen thickness as of 0.2m, 0.4m and 0.6m on the Summer solstice (July 21) 5:00, 6:00 and 7:00pm. The experimental results suggested the use of a pattern of 0.6m thickness to raise the thermal efficiency of the space.
External louvers were used on the eastern elevation, oriented perpendicular to the sunrise angle, to avoid the problem of sun glare and to offer a view to the outside. During school time will have a special experience with colors that responds to sun movement and climate conditions.

Openings in the soffit above the louvers allow heat to rise and escape rather than accumulate adjacent to the glazing.
The stairs on the south elevation are the main circulation for students. They use them early in the morning, when moving from the entrance to the classrooms, during lunch break, and when they leave the school.

To make the stairs more exciting, horizontal dichromatic glass panels in the glass trace of the stair enclosure were used to create reflections and transmission of colors that change throughout the day.
The open plan helps create visual contact between the inside and outside of the building. The courtyard is one of the traditional architectural elements of this region that help to improve the indoor climate. The open plan also help to complete the airflow circuit through the building.
The structure plays an important role in illustrating the difference between school and community space. The space of the school is composed of repeated columns and the relationship between the walls to the columns fits the idea of directing the students' attention inward. In the community space, the large spans create the sense of outward focus.
Conclusion

A good school responds to nature and makes students think about natural phenomena. It has the ability to inspire and transform students day-to-day experience, while meeting their educational needs. It is important that a school encourages learning in the classroom and acts as a place of gathering, and community. In both cases the building invites students to advance their awareness of perception.

A community space should be transparent, open, and reflective of the identity of its community, thus making it more welcoming. The intersection of the two realms creates a building that meets the needs of community and school simultaneously.

"... an architecture of place rather than space, and a way of building sensitive to the vicissitudes of time and climate."

Kenneth Frampton: Ten Points on an Architecture of Regionalism
References


All works (photographs, models, sketches, drawings ) are the work of the author