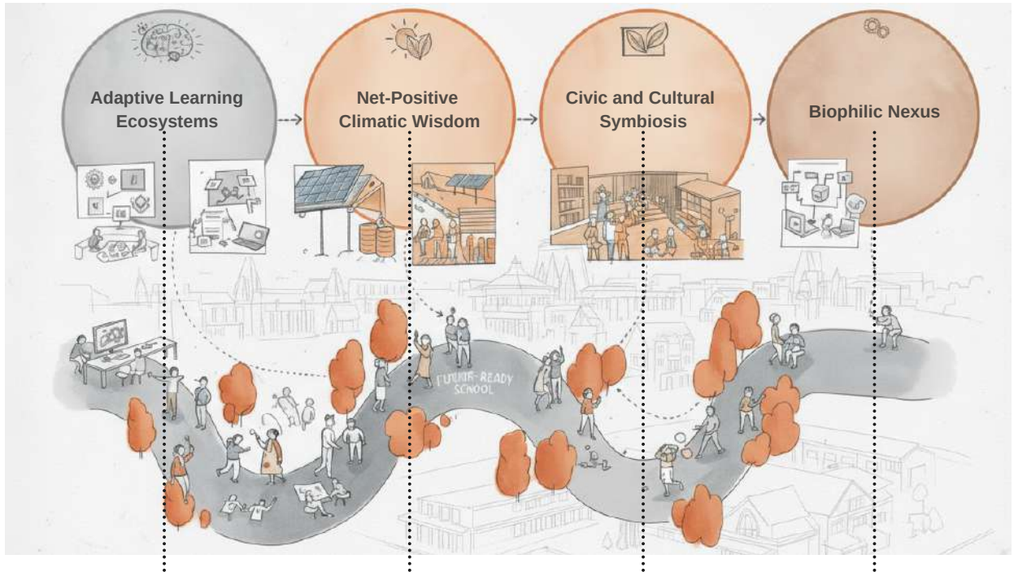
Navya Gurukul - new age place of learning

VISION : "To design a school that becomes a bridge between heritage and the future — a living learning ecosystem that celebrates culture, embraces innovation, and connects with its community through spaces that breathe with nature, adapt with time, and inspire generations to think, make, and belong."

Design Directives



The school's design framework should redefine learning by creating flexible, digitally integrated spaces that transform into collaborative studios, empowering both educators and students to experiment & adapt.

The school should function as a living sustainability laboratory, employing passive climate strategies and net-positive energy systems for thermal comfort and resource independence.

The campus should dissolve institutional and civic life boundaries by opening shared amenities like the amphitheater, library, & multipurpose hall, establishing a shared platform for collective community growth.

The design should seamlessly integrate nature and biophilic principles to foster mental well-being and an essential connection between learning and the living world.

Rani ki Vav(Queen's Stepwell)

Textile weaving

Garba dance form

Local Food

Why this site?

Strategic Location Near Education Hub
Close to major institutes and university zones, promoting collaboration and a connected learning ecosystem.

Proximity to Pitamber Lake & Nature
Overlooks Pitamber Lake, enabling biophilic design, ecological learning, and a cooler microclimate.

Good Accessibility & Connectivity
Located along Pitamber Lake Road with easy access to city routes, institutes, and nearby residential areas.

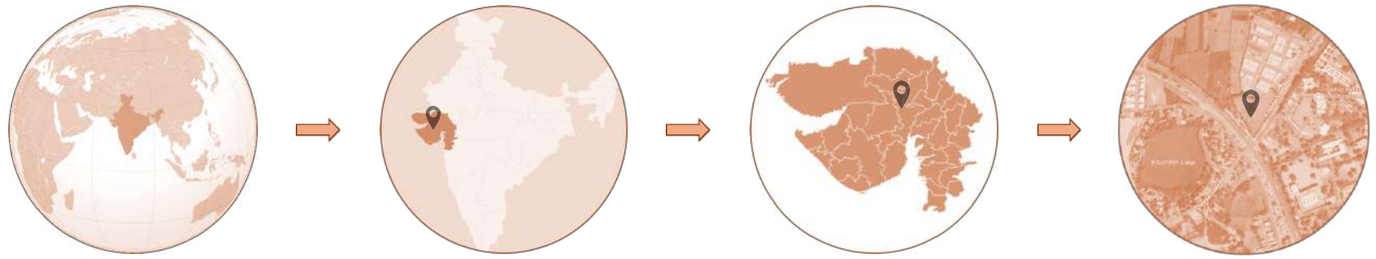
Climate-Responsive Orientation Open site and lake breeze allow passive design—natural light, ventilation, shaded terraces, and solar potential.

Rich Cultural & Educational Heritage
Set in historic Patan, home to UNESCO's Rani ki Vav (Queen's Stepwell), blending tradition, art, and modern education.

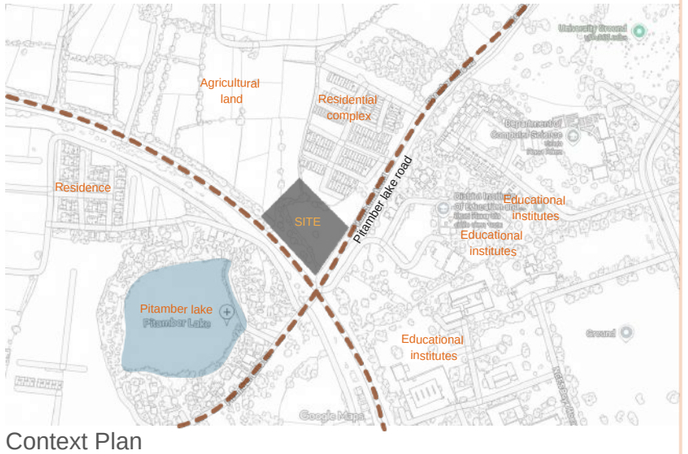
Close to Artisans & Handloom Culture
Located along Pitamber Lake Road with easy access to city routes, institutes, and nearby residential areas.

Location

The 65000 sqft site is located along **Pitamber Lake Road in Patan, Gujarat**, positioned between **Pitamber Lake** and a cluster of **educational institutes**, with **residential areas to the west** and **agricultural land to the north**, creating a balanced setting that connects learning, living, and nature. Patan, a historic city and former Chalukya capital is famous for landmarks like the UNESCO-listed *Rani ki Vav* (Queen's stepwell) and the intricate *Patan Patola* silk weaving tradition.



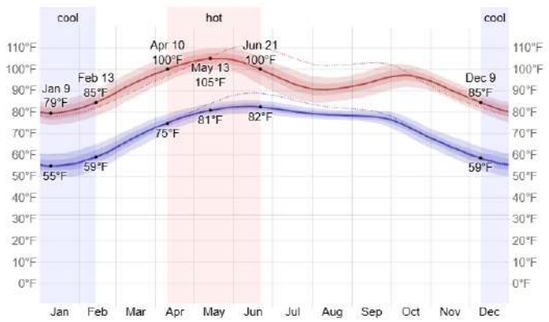
Location Plan



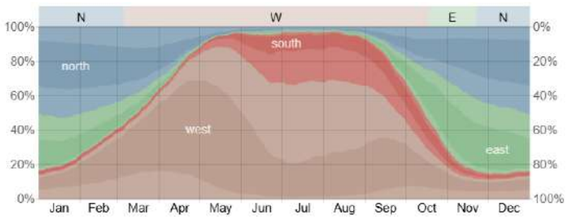
Context Plan

Climate

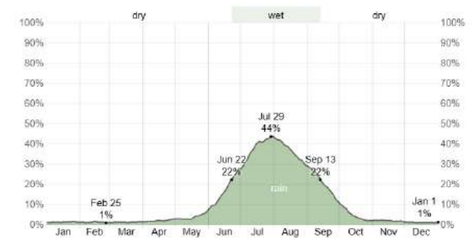
Average High and Low temperature in Patan



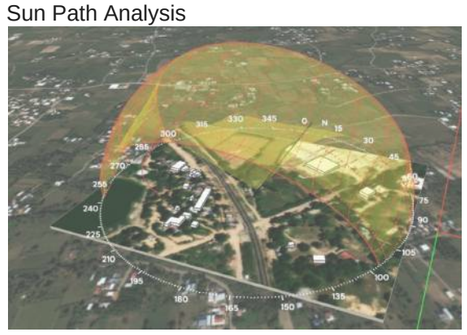
Wind direction in Patan



Average monthly rainfall in Patan



Sun Path Analysis



Patan experiences a hot semi-arid climate, characterized by high summer temperatures, mild winters, and low annual rainfall. Summers (March–June) can reach up to 42°C, making solar exposure and heat gain critical design considerations. The monsoon season from July to September brings moderate rainfall, while winters remain pleasant with temperatures averaging 10–15°C. Predominant wind directions are from the southwest during summer and monsoon, providing an opportunity for natural ventilation when harnessed through building orientation and openings

AREA PROGRAMME

A school area programme suitable for the future focuses on adaptability, specialization, well-being, and seamless technological integration.This programme moves beyond general ciriculum by dedicating significant space to future-ready labs: AI,coding & Robotics,Makerspace labs, Social Innovation, Environmetal labs and Digital Media. which prepares students for the 2035 economy, where computational thinking and design skills through project based learning are essential.

Seven Reasons: Why This Programme is Future-Ready

Dedicated Investment in Advanced STEAM and AI Literacy

Prioritization of Flexible, Multi-Modal Learning

Integration of Arts and Performance for Holistic Skills

Recognition of Physical wellbeing and Mental health

Maximizing Outdoor Play and Athletic Versatility

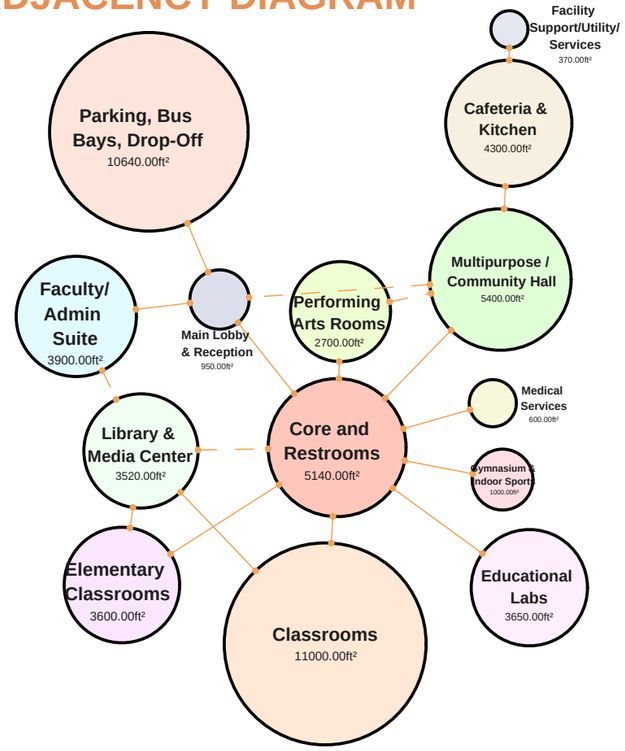
Efficient and Inclusive Community Integration

Investment in Foundational Early Childhood Education

Input Fields	Space wise Area Summary	
Space Label	Net Area (Target)	Net Area (Achieved)
Labels to identify Spaces (Required)	*Total Target area of a Space* (Calculated) M = F x G	*Designed area of Space after edits* (Calculated) N = " (B * C)
	0.00	65440.42
	600	636.56
	2500	2494.08
	1200	1195.60
	800	793.72
	40.00000000000001	40
	11000	11323.36
	40.00000000000001	40
	80.00000000000001	80
	100	120
	150	130
	900	909.92
	600	575
	600	664.21
	600	600
	1200	1212.73
	1400	1400
	1700	367.28
	50	61.67
	500	491.89
	500	421.65
	700	751.37
	700	714.31
	500	516.67
	700	681.56
Backstage / Green Room	150	146.91
Collaborative Workshop Zone	800	810.65
Vocational Learning Zone	700	720
Multipurpose Hall	3600	3700.01
AV / Control Room	150	146.91
Counseling/support room	100	100
Medical Room	500	500

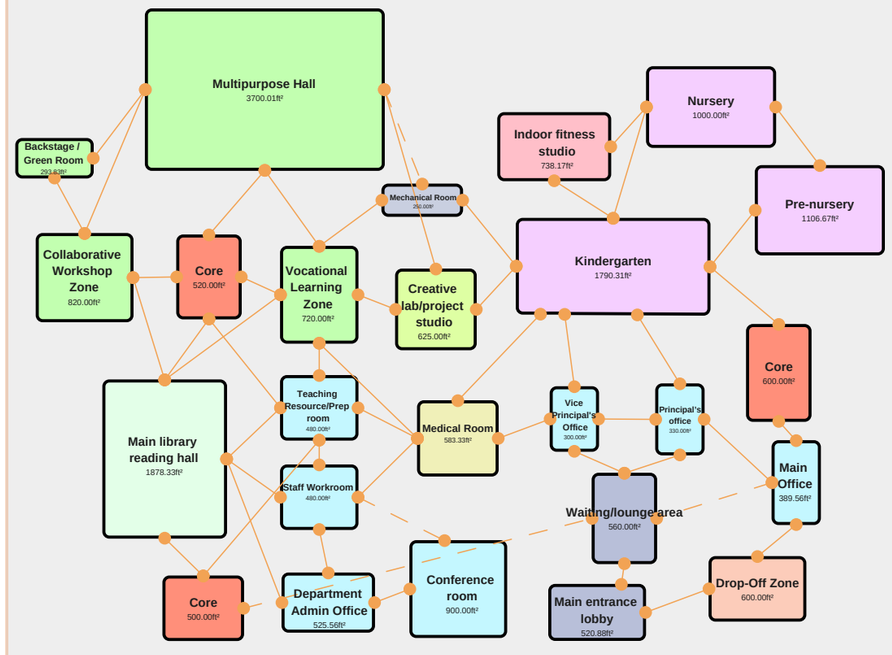
Input Fields	Space wise Area Summary	
Space Label	Net Area (Target)	Net Area (Achieved)
Labels to identify Spaces (Required)	*Total Target area of a Space* (Calculated) M = F x G	*Designed area of Space after edits* (Calculated) N = " (B * C)
	6000	6106.32
	500	525.69
	250	264.56
	100	125
	300	300
	350	330
	900	900
	500	536.56
	500	480
	500	480
	1000	965.69
	100	100
	100	100
	400	400
	120	123.33
	1800	1782
	1000	1087.5
	1000	1000
	1600	1645.31
	200	210.44
	450	460
	300	300
	100	100
	150	150
	750	777.36
Counseling/support room	100	100
Medical Room	500	500
Drop-Off Zone	600	600
Standard Car Parking Zone	4200	3809.31
Accessible car parking zone	350	336.98
Bus Bay	1850	1855.98
Multipurpose Turf Playfield	2000	1900.00
Hard Surface Play Court	1200	1000.00
Nature/Experiential Play Zone	800	800.00
Shaded Gathering Plaza	800	800.00

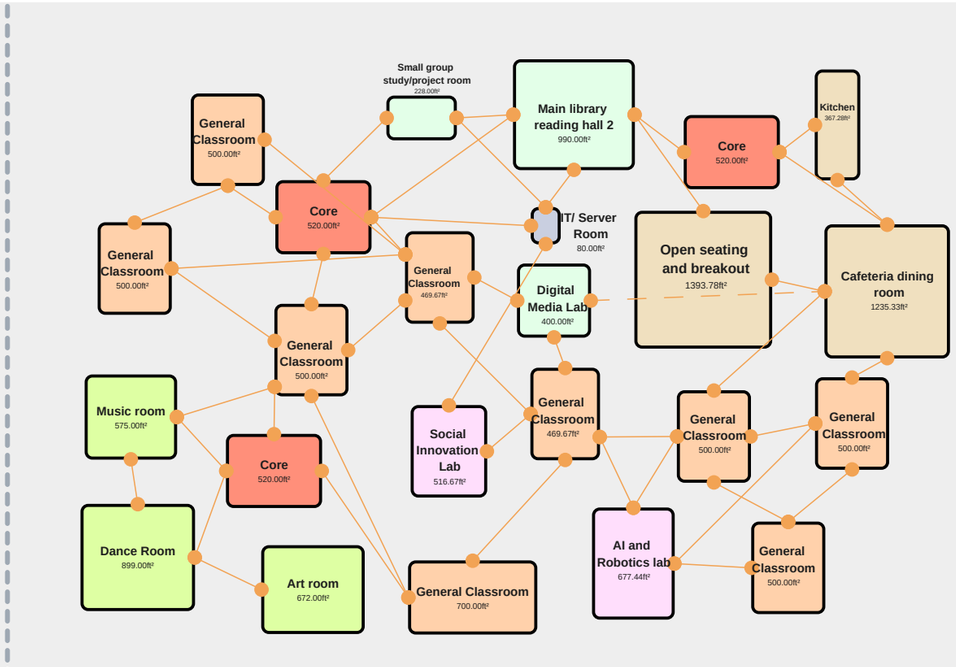
ADJACENCY DIAGRAM

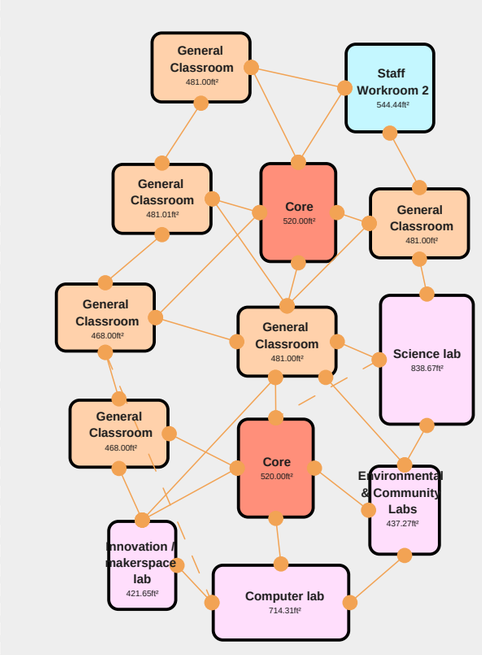


This adjacency diagram for a K–12 school illustrates a well-organized spatial hierarchy for all the departments that prioritizes accessibility, functionality, and community interaction.

FLOOR-WISE ADJACENCY DIAGRAM



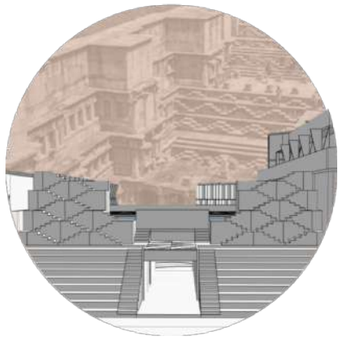




MASSING STRATEGIES

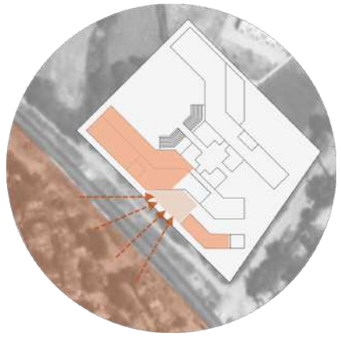
Central courtyards and greens

The massing is organized around interconnected courtyards and green corridors that weave through the campus, ensuring visual continuity, natural ventilation, and a sense of openness between academic and community zones.



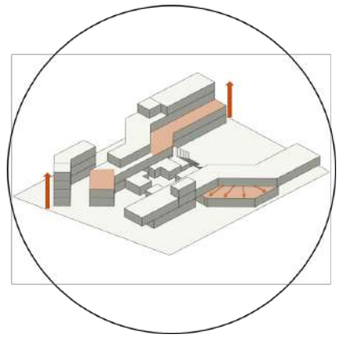
Amphitheatre (Rani ki Vav)

Centrally located, the amphitheatre acts as both a visual and functional anchor serving as the heart of communal and cultural activities. Inspired by *Rani ki Vav*, its terraced form celebrates local heritage while creating a dynamic space for performances.



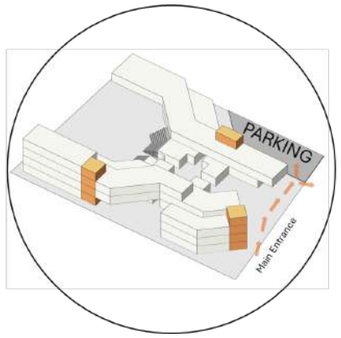
Community integration

Community-oriented spaces such as the multipurpose hall and library are placed along the western edge, opening towards the adjoining residential area and forming a welcoming, shared interface with the neighborhood.



Building height and self-shading

Building blocks are elevated on the southwest and south sides to provide self-shading for courtyards and terraces, reducing heat and enhancing comfort. Terraces are attached to activity rooms creating flexible spaces that blur the boundaries between indoor and outdoor learning.



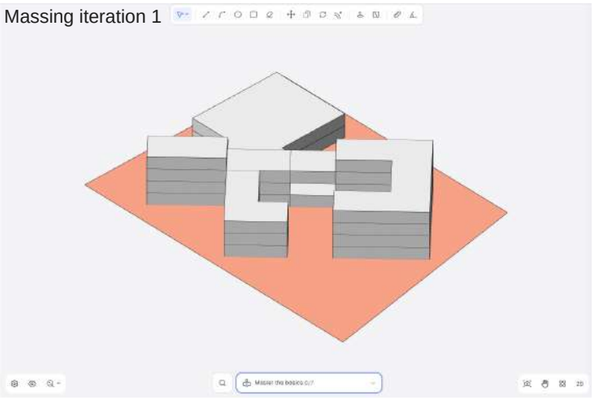
Core and parking placement

Vertical circulation cores are strategically positioned to act as thermal buffers against harsh sun exposure, while parking is efficiently located near the main entrance for easy access and smooth circulation.

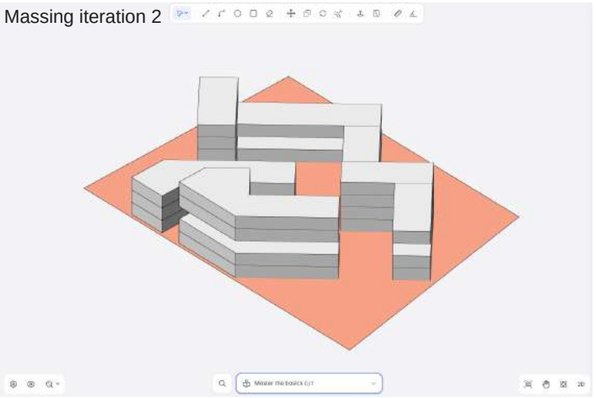
SITE PLAN

GROUND FLOOR PLAN

Massing iteration 1

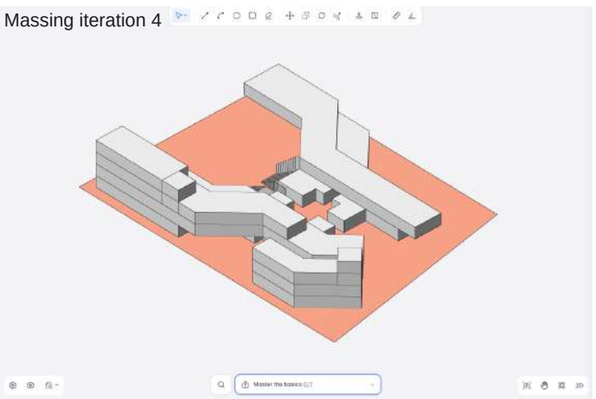


Massing iteration 2

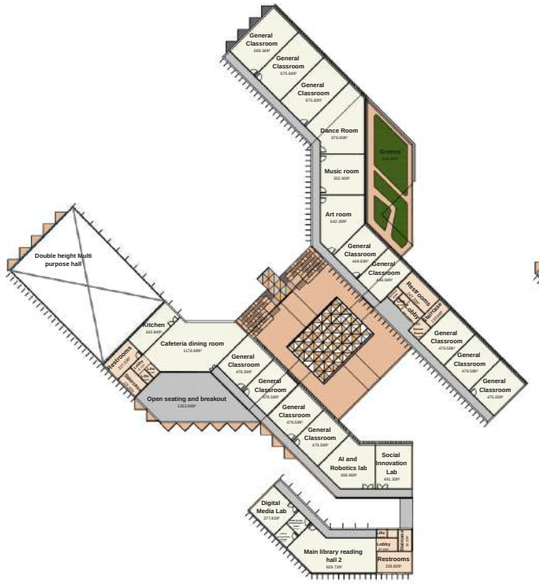


Massing iteration 3

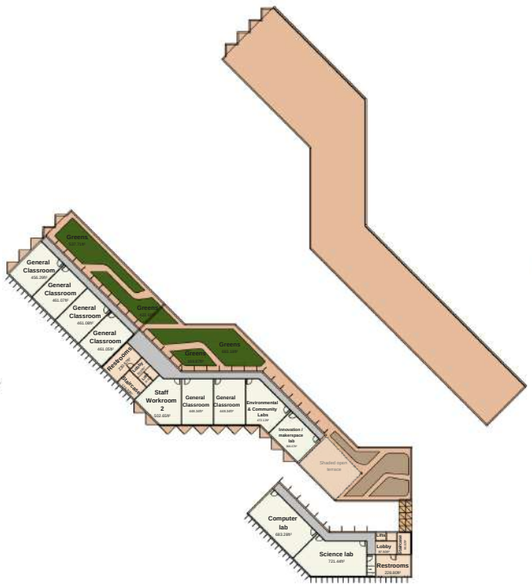
Massing iteration 4



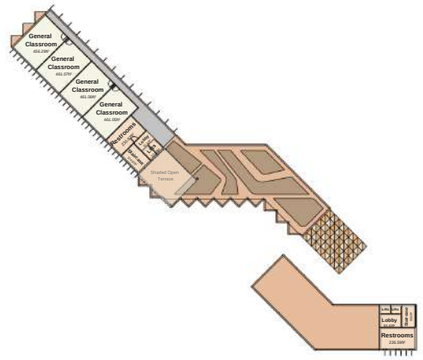
Floor Plans



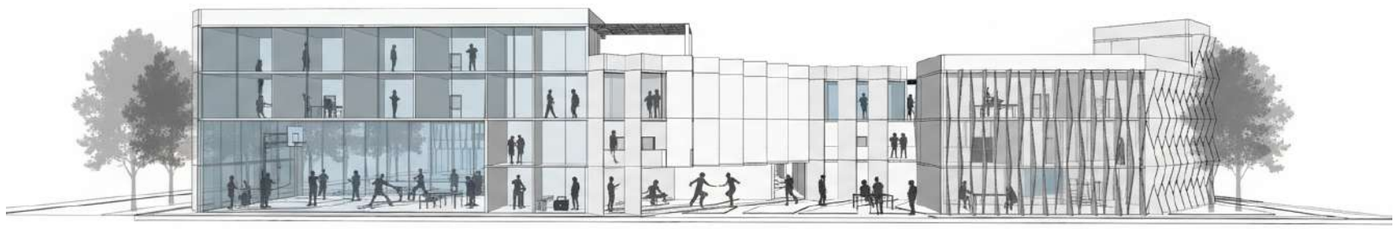
First Floor Plan



Second Floor Plan



Third Floor Plan



Perspective Section

Flexible Learning Spaces

The school has learning environments that adapt to diverse teaching and collaboration modes. With modular furniture, movable partitions, and digital tools, spaces transform seamlessly between lectures, discussions, and hands-on activities creating a dynamic, inclusive ecosystem fostering continuous learning.The multipurpose hall serves as a flexible hub, easily transforming to host indoor sports, cultural performances, or community gatherings, fostering interaction and shared experiences beyond academic use.

Incorporation of latest digital and online learning technologies

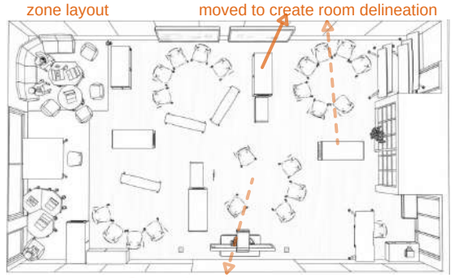
Traditional Lecture/ Presentation Layout

Flippable shift tables to create more space when needed

This arrangement focuses on a clear line of sight to the front of the room, ideal for lectures, presentations, and direct instruction using the smart board.

Blended Learning zone layout

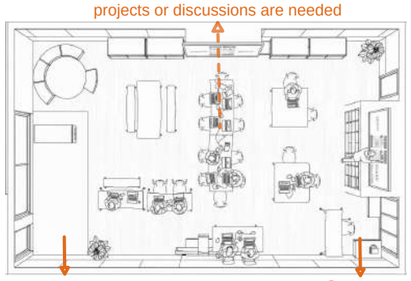
Open modular shelving can be easily moved to create room delineation



Spaces for smaller group or individual projects

This layout features small clusters of desks, encouraging teamwork, discussion, and hands-on activities.It is excellent for activities that require both individual focus and collaboration

Modular movable table for when larger collaborative projects or discussions are needed

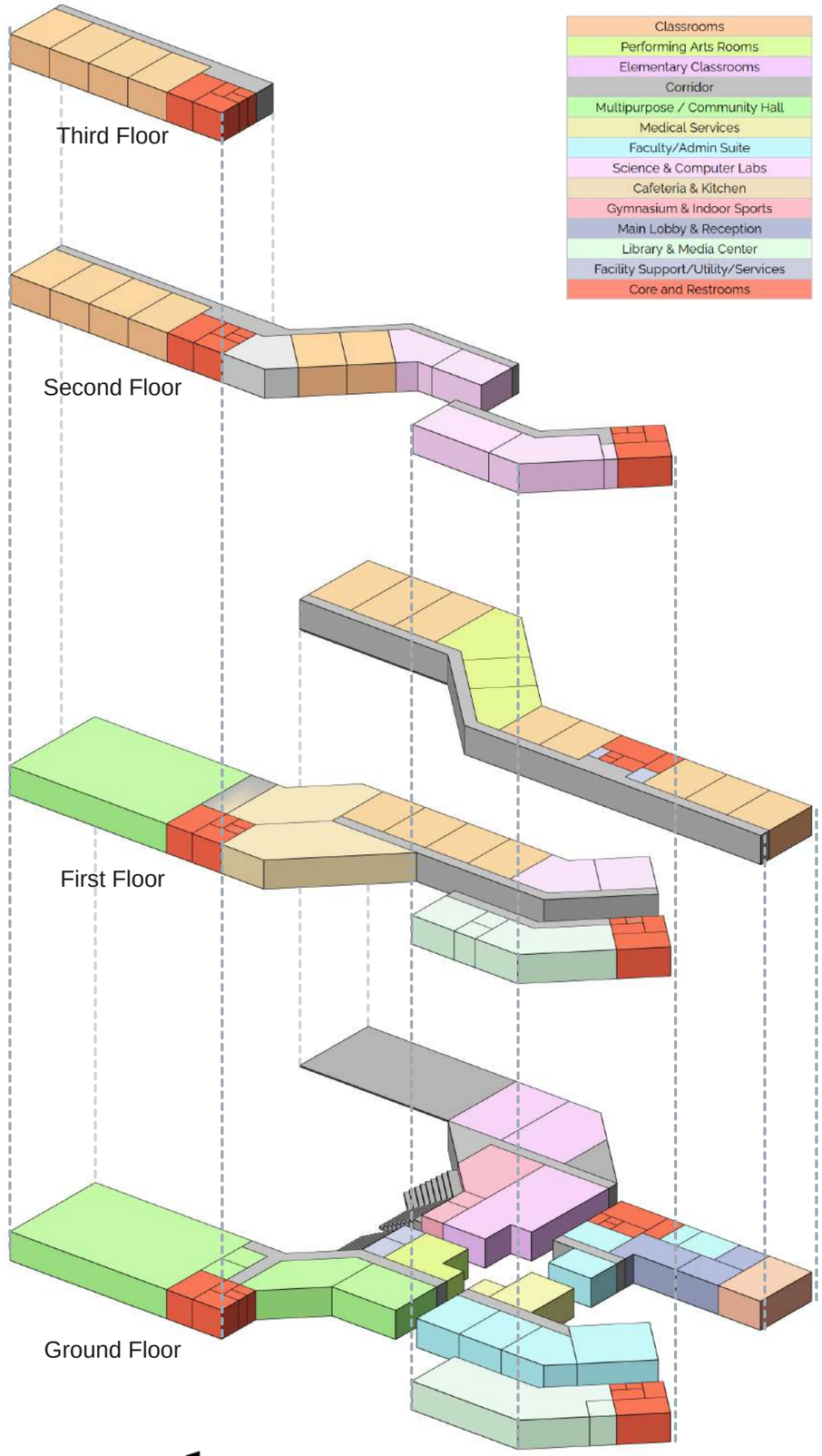


Flexible Zones with Open Space

Seperate quite space

This layout promotes class discussions, debates, and activities where students need to see and interact with each other as well as the instructor

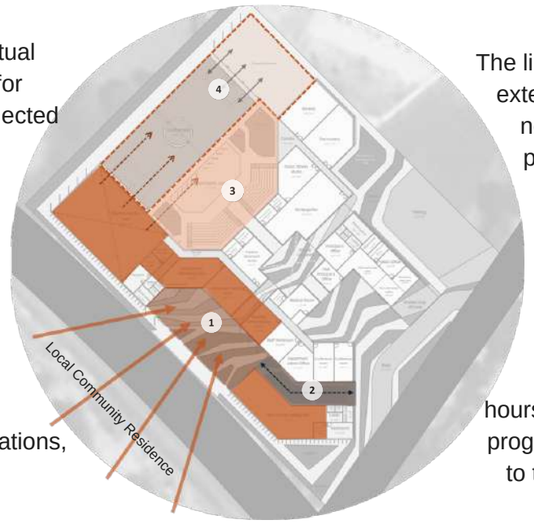
Exploded Isometric



Community Integration : Blurring boundaries between civic and institutional Infrastructure

Community Courtyard

The Community Courtyard serves as a vital hub, fostering mutual learning between locals and students, and providing a space for showcasing local crafts and traditional art. The adjacent, connected social spaces such as Multipurpose Hall, vocational training centres, library are intentionally positioned here for easy accessibility to the community after school hours



This stepped, terraced venue, which echoes Patan's architectural heritage, is designed as a democratic public forum for large gatherings. It is utilized by students for school assemblies, performances, and outdoor classes, while also functioning for the local community as a space for civic celebrations, cultural festivals, and large-scale public gatherings

Amphitheatre

Library Courtyard

The library facility is accessible to the public and that the courtyard extends the learning environment outdoors for both students and neighbors. This space can be for focused outdoor study, group projects and quiet reading breaks, leveraging its isolation for a peaceful environment.

The design includes a dedicated sports field for physical well-being, which is also accessible to the community after school hours for neighborhood leagues, recreational activities, and fitness programs. Additionally, a semi-covered space is provided adjacent to the field, ideal for traditional games like Kho Kho and Kabaddi.

Sports Field

Multipurpose Hall : Flexible Community Space

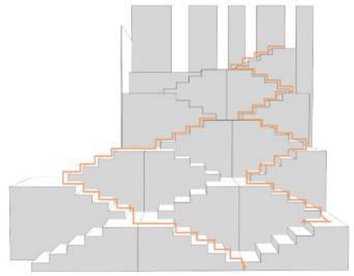
Openable walls

The versatile double heighted multipurpose hall is designed to seamlessly transform, accommodating functions from vibrant social gatherings and dynamic indoor sports like basketball / badminton, to educational activities such as poetry recitals and art exhibitions. With its openable walls, the hall can extend into the adjacent sports field and outdoor amphitheater, creating an expansive continuous space perfect for larger gatherings, lively fairs, and community festivals

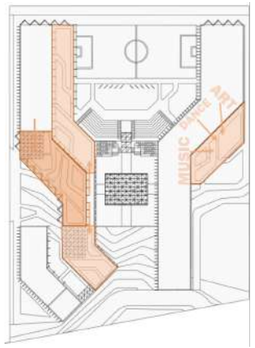
Integrated Green Spaces: The design integrates **connected green spaces** that flow throughout the school. **Shaded, porous courtyards** serve as central gathering areas, providing natural light, passive cooling, and essential **rainwater harvesting**, effectively merging ecology with built form for a sustainable learning environment.

Courtyard

Amphitheatre



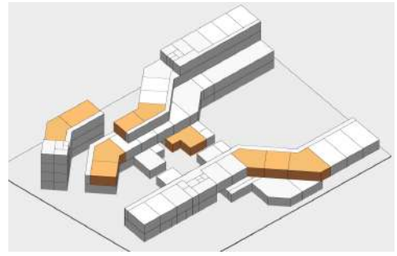
Inspired by **Rani ki Vav's** terraced spatiality, the **amphitheatre** forms the cultural heart of the campus—a democratic forum for performances, assemblies, and celebrations. Its stepped geometry not only echoes Patan's architectural heritage but also acts as a **metaphor for layered learning**—where every step is a progression of thought and experience.



Shaded terraces extend learning spaces, allowing classrooms, labs, and cultural rooms to open up. This eliminates closed-room limits, directly connecting education with the **ecosystem** for a more dynamic and expansive learning experience.

Shaded Terraces

Innovation labs



The campus includes **STEAM, AI, and robotics labs**, along with makerspaces, innovation zones, and social impact studios that blend technology with empathy. **Performing arts and wellness spaces** support holistic growth—nurturing creativity, ethics, emotional intelligence, and community.

The **cafeteria** is designed for direct access and visual connection to the **amphitheater**. Dining features **semi-covered seating** that opens onto community spaces, extending mealtime outdoors and actively linking the social hub with the outside world.

Cafeteria Seating

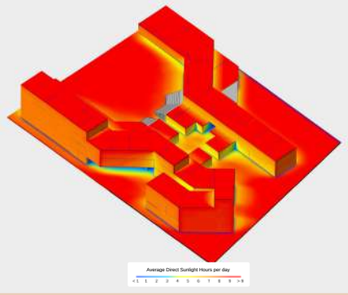
Parking and Entry

The entire parking area is strategically located near the **main road** to ensure maximum convenience and **easy accessibility** for all. The design prioritizes accessibility with a **dedicated parking space for specially abled** individuals and necessary **ramps** for seamless movement.

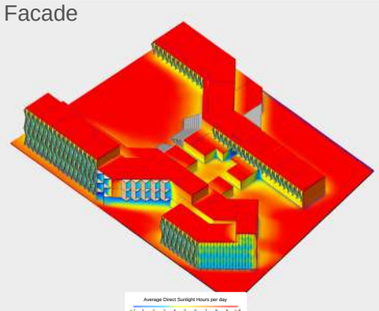
Key Design features

FACADE STRATEGIES

Before Facade

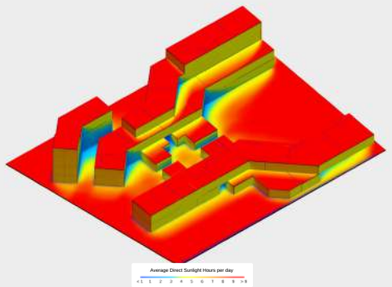


After Facade

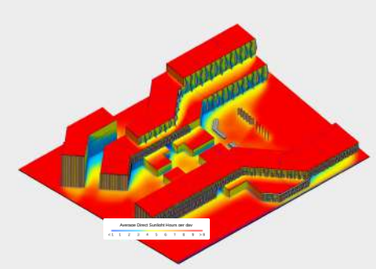


The sun hours analysis shows that the west and south façades receive high solar exposure. With the addition of perforated panels and angular fins, direct sunlight and heat gain are significantly reduced, improving thermal comfort and daylight quality.

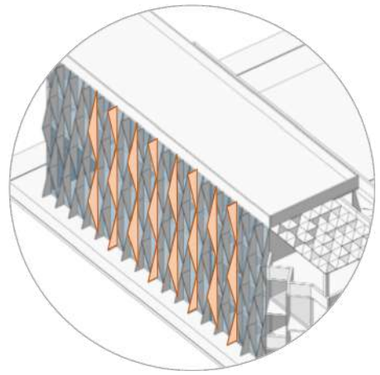
Before Facade



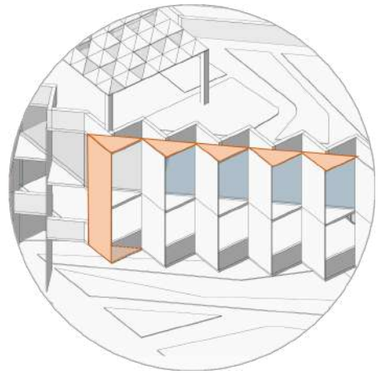
After Facade



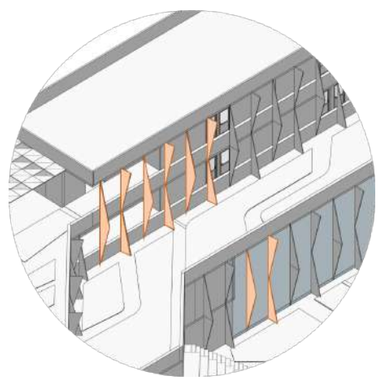
The sun hours analysis indicates moderate solar exposure on the north and east façades. After incorporating perforated panels and vertical shading elements, direct sunlight and glare are effectively controlled while maintaining soft, uniform daylight.



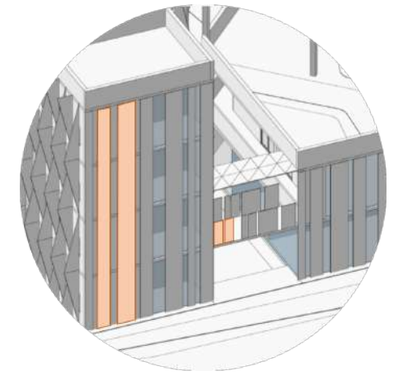
South West Facade: The southwest façade uses folded perforated metal panels combined with alternating triangular fins, which block harsh low-angle sun from the southwest while allowing diffused daylight and airflow inside. The angular geometry creates self-shading surfaces inspired by Patan's traditional jaali patterns, reducing heat gain while adding a rhythmic architectural identity.



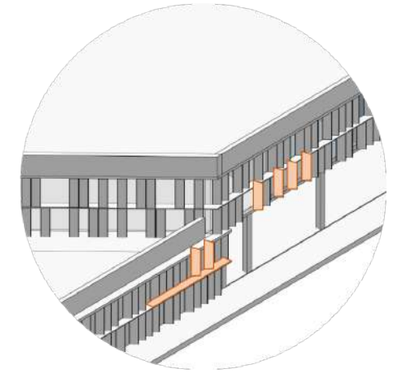
South Facade: The south façade employs angular projecting modules that create self-shading surfaces to minimize solar heat gain while maintaining outward views. The alternating geometry optimizes daylight penetration and reduces glare, improving indoor thermal comfort. This form also enhances façade depth and structural expression, contributing to the building's passive solar performance.



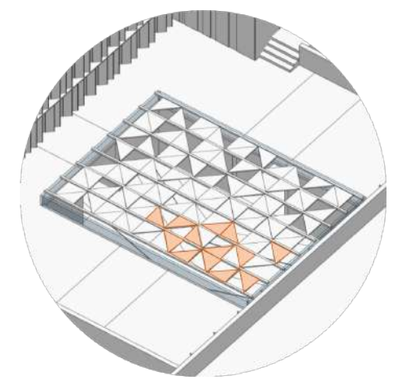
North Facade: The north façade incorporates widely spaced vertical fins that provide structural rhythm while allowing maximum diffuse daylight penetration. The fin spacing and orientation are optimized to minimize glare without obstructing views, enhancing daylight quality within interior spaces. This configuration supports passive design performance by maintaining visual comfort and reducing reliance on artificial lighting.



East Facade:
The east façade features vertical perforated metal panels that filter morning sunlight, reducing glare and heat gain while allowing natural ventilation. The uniform vertical rhythm enhances façade articulation and maintains daylight balance within interior spaces.

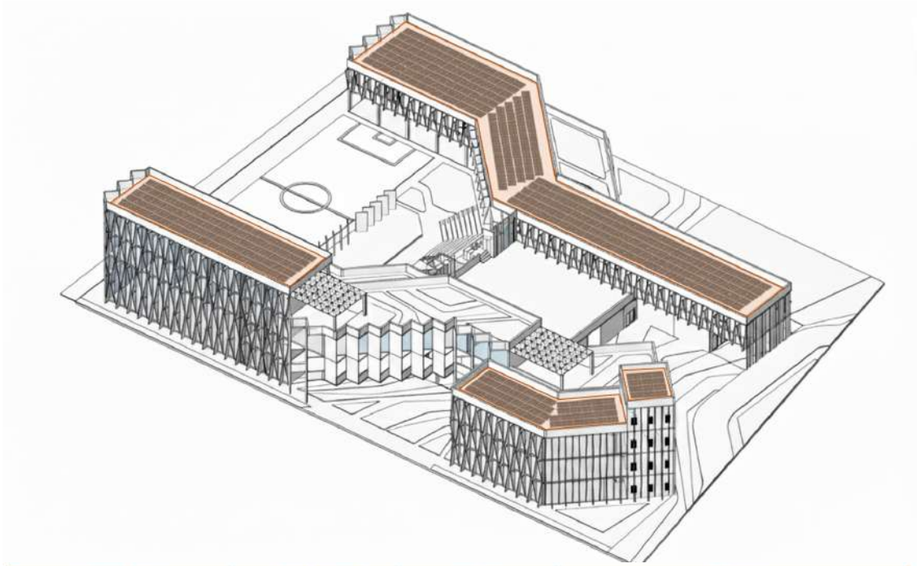


North-East Facade: The north-east façade features vertical perforated metal panels combined with narrow glazing strips to balance daylight and privacy. The perforated screens diffuse soft northern light while reducing glare from the east, maintaining visual comfort and thermal efficiency. The vertical alignment of the panels creates a consistent rhythm and unifies the façade expression across the building.



Central Courtyard Pergola: The central courtyard pergola consists of a triangulated metal framework with perforated panels that filter direct sunlight, creating a dynamic pattern of light and shadow. The geometry is optimized to allow controlled daylight penetration and natural ventilation, improving thermal comfort in the courtyard. This passive shading system reduces solar heat gain while enhancing the spatial quality and visual identity of the central space.

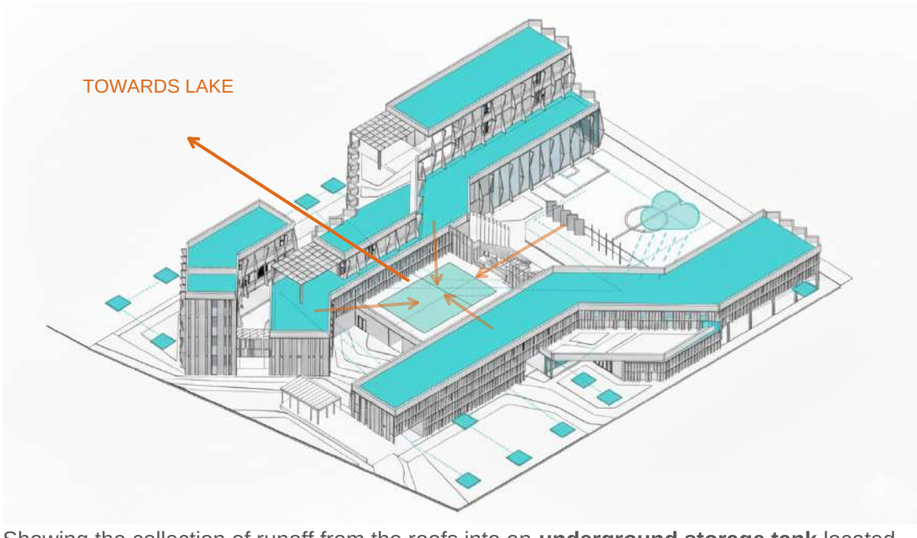
Net-Positive Solar Campus



Category	Parameter	Value	Notes
School Building	Built-up Area	70,000 sqft	Total constructed area
Solar Installation	Rooftop Area for Solar	14,500 sqft	Usable solar panel space
Solar Potential	Daily Generation	2,045 kWh/day	Peak solar energy in summer (20% efficiency)
	Annual Generation	≈ 750,000 kWh/year	Maximum generation potential
Energy Consumption (School)	Annual Consumption	≈ 560,000 kWh/year	Efficient school (8 kWh/ft²/year)
Coverage by Solar	Solar Offset	≈ 134%	Solar can fully meet and exceed annual demand

With optimal conditions, a 14,500 sqft solar rooftop can completely power the 70,000 sqft K–12 school in Patan, generating about 34% surplus electricity annually. This makes the campus a net-positive energy building, demonstrating sustainability and self-sufficiency through renewable energy integration.

Rainwater harvesting system for the school



Showing the collection of runoff from the roofs into an **underground storage tank** located centrally within the courtyard area. The ground material in the courtyard uses permeable pavers. The system also includes several **rainwater harvesting pits** spread across the non-roof surfaces to recharge groundwater, will then be directed to a nearby lake.

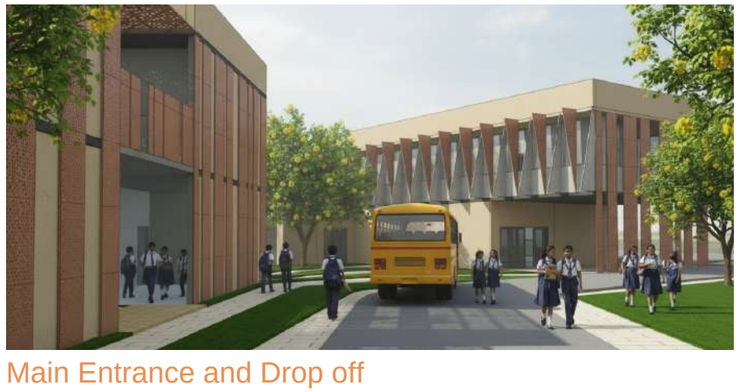
3D Realistic Renders

Day - Night Bird eye view

Bird eye view

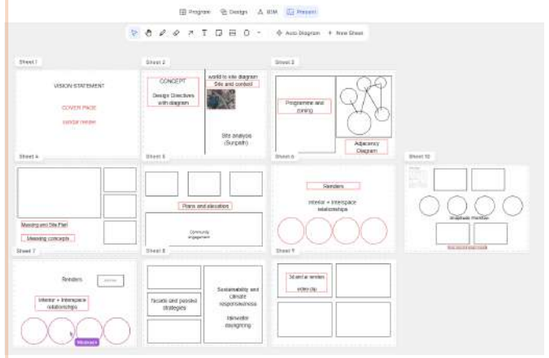
Community Courtyard

Front View

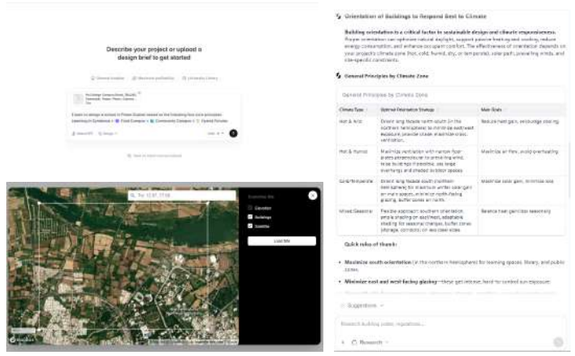


Main Entrance and Drop off

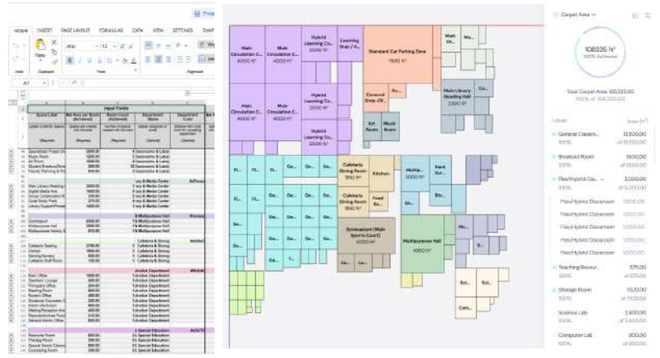
1 Used Snaptrude's Present mode to create a storyboard for organizing and visualizing our architectural design process.



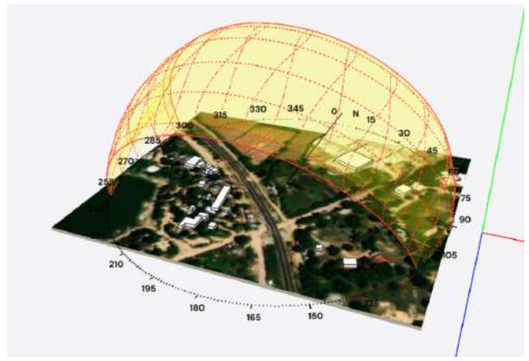
2 Used Snaptrude's AI to add the site location, generate the context, give prompt for requirements of the brief and get programme, building orientation strategies, etc



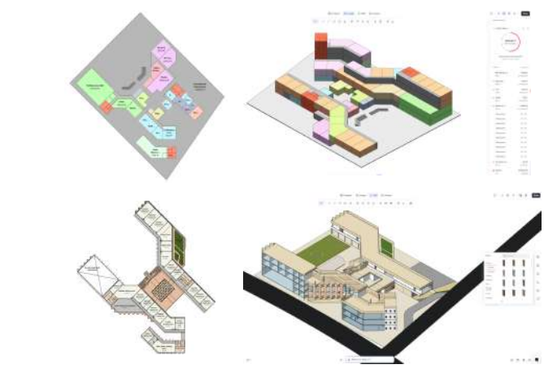
3 Snaptrude's **AI Program feature** instantly generated the required area targets, which **live-linked** and synchronized with the **3D model** (right) for real-time area validation.



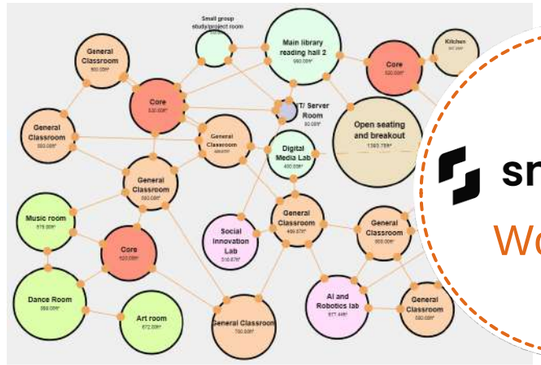
4 Snaptrude was used to **import the site context** and display the **precise sun path** for early climate and orientation analysis.



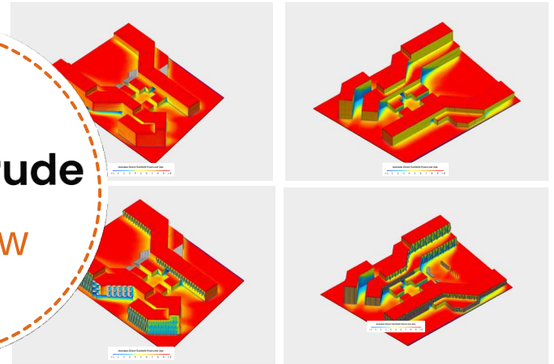
8 The **Sketch to BIM** feature was then utilized to automatically convert the massing into a detailed, BIM-compliant model.



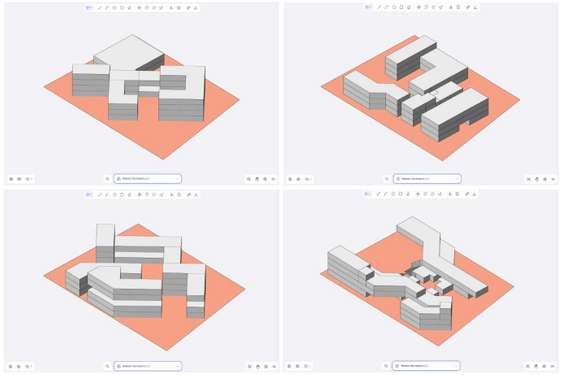
7 An **Adjacency Diagram** was automatically generated from the program data, visually mapping the required spatial relationships and flows before finalizing layout.



6 **Sun Hours Analysis** was run on the massing models to quantify solar exposure and inform optimal building orientation and facade design.



5 Following analysis, the design was progressed through **quick massing studies** using Snaptrude's Design tools to explore various forms and layouts shown above.



9 The model was then refined and annotated with conceptual details directly within the platform's **Presentation Mode** on **IPAD**, enhancing communication and design clarity.

10 Design detailing was accelerated by **Snaptrude's collaborative ability**, which allowed two members to work **simultaneously** on different aspects in the **same file**.

11 **AI rendering** was performed using integrated tools like **Nano-Banana** and **Veo** to generate final, realistic visualizations and video clips.

12 The final design and analysis were delivered using a dynamic presentation directly from the platform's **Present Mode**.