

Nanyang Technological University Learning Hub completed

The Learning Hub at Nanyang Technological University (NTU), Singapore, designed by Heatherwick Studio and executed by lead architect CPG Consultants, is a new educational landmark for Singapore.

As part of NTU's redevelopment plan for the campus, the Learning Hub is designed to be a new multi-use building for its 33,000 students.

Instead of the traditional format of an educational building with miles of corridors linking box-like lecture rooms, the university asked for a unique design better suited to contemporary ways of learning. With the digital revolution allowing learning to take place almost anywhere, the most important function of this new university building was to be a place where students and professors from various disciplines could meet and interact with one another. The Learning Hub is envisioned to be a place where students might meet their future business partner or someone they could share an amazing idea with.

The outcome is a structure that interweaves both social and learning spaces to create a dynamic environment more conducive to casual and incidental interaction between students and professors. Twelve towers, each a stack of rounded spaces, taper inwards at their base around a generous public central atrium to provide 56 tutorial rooms without corners or obvious fronts or backs.

The new-generation smart classrooms were conceived by NTU to support its new learning pedagogies that promote more interactive small group teaching and active learning. The flexible format of the rooms allows professors to configure them to better engage their students, and for students to more easily collaborate with each other. The rooms in turn

open onto the shared circulation space around the atrium, interspersed with open spaces and informal garden terraces, allowing students to be visually connected while also using the space to linger, gather and pause.

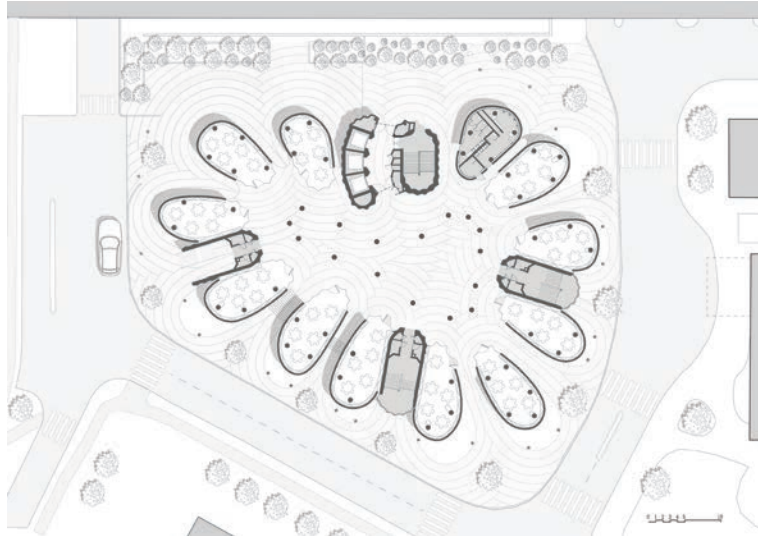
Prof Kam Chan Hin, Senior Associate Provost (Undergraduate Education), NTU, said, "The new Learning Hub provides an exciting mix of learning, community and recreational spaces for NTU students, professors and researchers from various disciplines to gather and interact. By bringing people and their ideas together, NTU can spark future innovations and new knowledge that increasingly happen at the intersection of disciplines".

Thomas Heatherwick, Founder and Principal, Heatherwick Studio said, "Heatherwick Studio's first major new building in Asia has offered us an extraordinary opportunity to rethink the traditional university building. In the information age, the most important commodity on a campus is social space to meet and bump into and learn from each other. The Learning Hub is a collection of hand-made concrete towers surrounding a central space that brings everyone together, interspersed with nooks, balconies and gardens for informal collaborative learning. We are honoured to have had the chance to work with this forward-thinking and ambitious academic institution to realise such an unusual project".

Project lead Vivien Leong of CPG Consultants, the Lead Architect and Sustainability Consultants for the Learning Hub, said, "The most exciting aspect of this project is to see such an inspired design develop into a uniquely contextual and functional building through a highly collaborative process. Managing this project was no mean feat as we had to ensure that our work complied with Singapore's rigorous building regulations and that it achieved the highest standards of sustainability, while working hard to retain the integrity of the original design and vision of NTU.



The Learning Hub amidst its surroundings.



Level 1 Plan. Image by Heatherwick Studio.



Level 4 Plan. Image by Heatherwick Studio.



Level 8 Plan. Image by Heatherwick Studio.



Access to the Learning Hub from Nanyang Drive.



One of 12 access points with balcony detail.

The opportunity to challenge convention by introducing several first-of-its-kind environmentally friendly features and innovative solutions that embody the spirit of modern day learning has been a truly rewarding experience for us".

The combination of local building codes and high environmental aspirations meant that a concrete construction was necessary. The primary design challenge was how to make this humble material feel beautiful.

As a result, the concrete stair and elevator cores have been embedded with 700 specially commissioned drawings, three-dimensionally cast into the concrete, referencing everything from science to art and literature. Overlapping images, specially commissioned from illustrator Sara Fanelli, are deliberately ambiguous thought triggers, designed to leave space for the imagination. The 58 angled concrete columns have a distinctive undulating texture developed specially for the project. The



Sara Fanelli load-bearing core walls.



Detail of lift lobby and bridge connections.

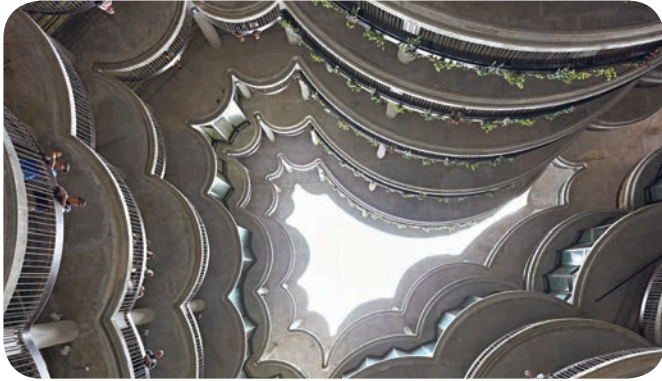
curved facade panels are cast with a unique horizontal pattern, made with 12 cost-efficient adjustable silicone moulds, to create a complex three-dimensional texture. The result of the building's various raw treatments of concrete is that the whole project appears to have been hand-made from wet clay.

With year-round temperatures in Singapore between 25° C and 31° C, it was important to maintain the students' comfort whilst achieving sustainable energy usage.

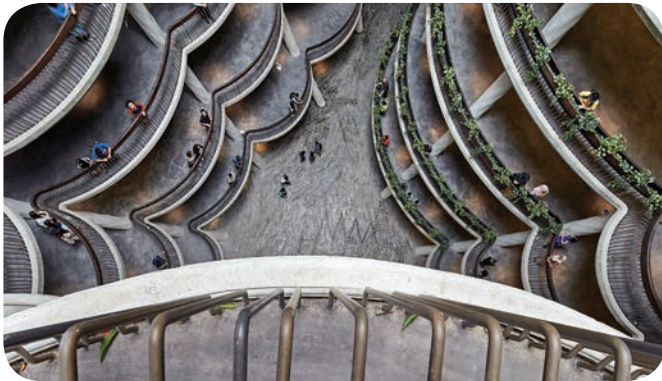
The building's open and permeable atrium is naturally ventilated, maximising air circulation around the towers of tutorial rooms and allowing students to feel as cool as possible. Each room is cooled using silent convection, which does away with the need for energy-heavy air conditioning fans. The Learning Hub building received the BCA Green Mark Platinum Award in 2013, the highest possible environmental award for a building of this type.

In a digital age when many students have multiple communication

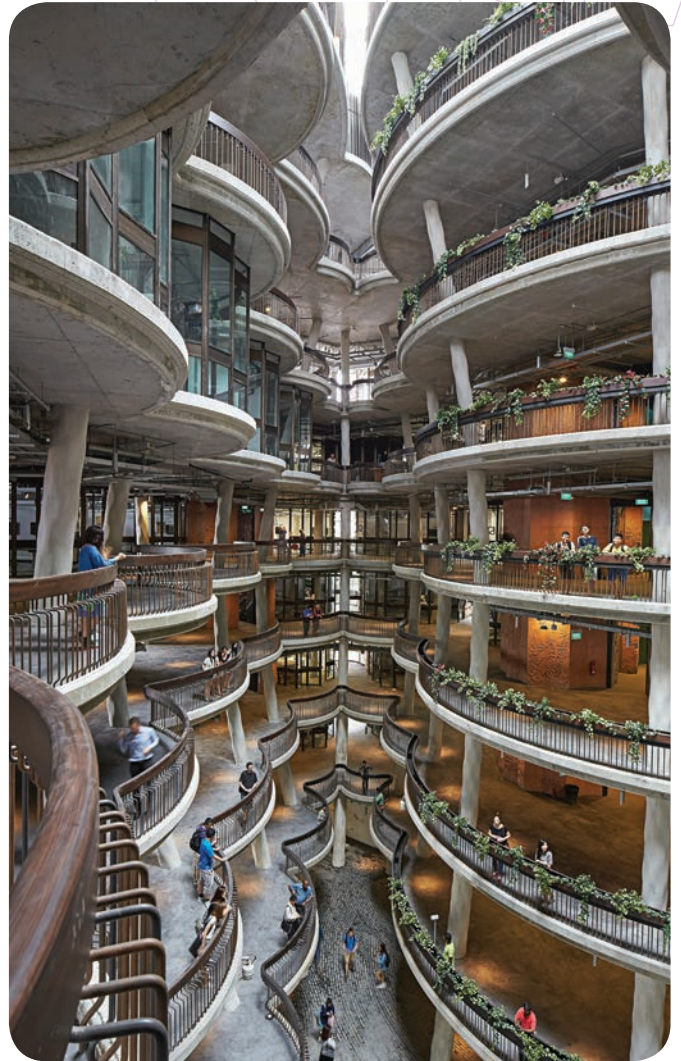
devices and ready access to knowledge, the Learning Hub reasserts the role of an educational building in the 21st century. No longer a place for traditional classroom teaching to passive students, NTU's new icon provides space for collaborative learning in a technology-rich setting. It will be a place for students to gather, where knowledge is shared, collaboration between disciplines takes place and where future leaders are nurtured.



View upwards from the atrium at Level 1.



View from Level 7 to Level 1.



Atrium space.



Detail of bronze staircase with protective rain screen.



Classroom interior with passive ventilation system.



Full height, atrium-facing classroom windows.



Evening view of the Learning Hub.

PROJECT DATA

Project

Nanyang Technological University Learning Hub

Location

Singapore

Commencement of work onsite

August 2012

Completion

March 2015

Site Area

2,000 m²

Gross Floor Area

14,000 m² approx

Building Height

8 storeys (33.6 m)

PROJECT CREDITS

Client / Owner

Nanyang Technological University

Lead Architect

CPG Consultants

Design Consultant

Heatherwick Studio

Main Contractor

Newcon Builders

Sustainability Consultants

CPG Consultants

Mechanical & Electrical Engineers

Bescon Consulting Engineers

Civil & Structural Engineers

T.Y. Lin International

All images by Hufton and Crow, unless otherwise stated.