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NON-PEER REVIEWED:

Vertical Studio: Undergraduate Collaborative Advanced Learning and Teaching Methodology

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Since 2016 the Environmental and Interior Design Programme (E&I), School of Design, The Hong Kong Polytechnic University, has implemented an educational model called the vertical studio. Until now, the vertical studio model has become an instrumental peer-to-peer learning scheme while enhancing students' competency in digital literacy. A first of its kind within the design education context of Asia, the vertical studio model has contributed to advance design education practices, embracing collaborative learning opportunities, and facilitate knowledge and skills transfer of drawing techniques, technology, and digital proficiency.

#peer-to-peer education

#digital proficiency

#collaborative learning and teaching methodology

#design educational model

A number of design schools globally have begun to implement the concept of a vertical studio model in their curricula. This is evident from current design courses taught in British, German, American, and South African institutions. The key feature of a vertical studio model is the collaboration of students across all years to address specific themes. In this context, the vertical studio model is not meant to override the traditional curriculum, but to both add, as well as, amplify design skills. Thus, its aim is to create peer-to-peer learning opportunities linked with assignments to translate visual observations and the perception of our built environment into two- and three-dimensional representations using manual and digital drawing techniques.

Having recognised the need to build up and strengthen industry related skill sets in the current E&I curriculum. However facing the limits of each semester's timeframe and allocated teaching resources - consisting of eight design studios, four core subjects and six peripheral courses annually - the concept of the vertical studio model was developed in response to accommodate for such additional demands.

Hence, the vertical studio is a two to four-week design analysis exercise, including students from all four years of the BA Honours program to work together within their designated studio setting at the beginning of the year. Students are organised into groups, consisting of one student from each of the four years (year 1, 2, 3 and 4). Individual students are assigned with different tasks, according to their skill levels, encouraging senior and junior students to collaborate using peer-to-peer learning methodology. During the vertical studio course, students congregate, engage, share, explore, and interact collectively.

The critical contribution of the vertical studio to the general E&I curriculum is the focus on the development and enhancement of specific skill sets and dedicated learning outcomes, which are delivered within a short time frame. First, the vertical studio acts as an introduction module to the academic year, the programme, and the people involved. Second, it establishes support groups amongst peers, allowing for student and staff familiarisation between each year. Third, it facilitates working relationships between junior and senior students, easing the process of juniors' commitment to help seniors during their final year project and in return, seniors assisting juniors with design and programme related questions. Fourth, the vertical studio manages expectations from either positions of the students and the programme, disseminating design and research practices, quality of work as well as what constitutes as a successful final year project.

Since its establishment in 2016, the vertical studio has been constantly evolving through the assessments of the teaching and learning outcomes each year. Tutors valuation and students' feedback are considered to adjust and improve both theme and assignments for future vertical studios.

A detailed insight of how such a vertical studio is excogitated can be described by the example of the studio's 2018 theme of *Verisimilitude* (high resolution detail). The brief was to illustrate one construction detail in two- and three-dimension by first, hand drafting the construction detail into an isometric drawing and second, to use Rhinoceros 3D computer software for its digital translation. Year 4 students mainly provided mentorship for the younger students. Year 2 and year 3 students were asked to digitally draw details, as well as assist year 1 students in hand drafting. In turn, year 1 students were responsible for accurate and specific site measurements and spatial documentation, hand drafting the same details through skills acquired from their peers. Tutors provided overall support for Rhinoceros 3D software introduction (year 2 and 3), introduction to site analysis (year 1), technical concepts and meth-

ods of isometric drawing techniques (year 1) as well as regular development feedback. Overall, the three-week exercise gave students time to encounter and surmount drafting challenges such as: drawing scope definition, site and measurement protocols, descriptive geometry and computer modelling methods, resolution/data management, drawing coordination and construction detailing.

Previous vertical studio themes included, the *Qamarah Eye*, the first of the vertical studio series held in 2016, which examined the status of Hong Kong's interior context. With roughly 4,000 photographic surveys, the main work focussed on the photographic representation of the city's interiority - exploring, understanding and handling of technical components, the notion of light and its three-dimensional rendering effect on space, image formation and aesthetics, while conceptually linking a variety of interior conditions to cultural, social, and economic aspects. The outcomes were presented in the form of two publications, an exhibition, as well as a series of awards for the best images produced sponsored by a design industry partnership with the E&I programme.

The second vertical studio, titled *IN_version*, held in 2017, explored the figure-ground condition within the city interior and the mapping of these complex relationships and boundary conditions. It combined urban spatial analysis with the interior-exterior dynamics of a city and its contiguous matrix of spaces. A total of eight axonometric drawings were produced, each three meters wide and one meter in height, illustrating three-dimensional rendering skills, hatching techniques, explorations of line styles, and spatial compositions.

In conclusion, the vertical studio advances the idea of collaborative design pedagogies. Not only does it promote and encourages a close working relationship between students of all years and their teaching staff but demonstrates an overall improvement of student's general design development, illustrating valuable understandings of knowledge and skills transfer by means of collegial teaching and learning methodologies. Thus, the vertical studio extends beyond the practical needs of digital competency alone but puts emphasis on peer-to-peer learning pedagogies to further theoretical discussions within design education, and to develop applicable models which allow for alternative solutions towards a collective teaching and learning strategy.

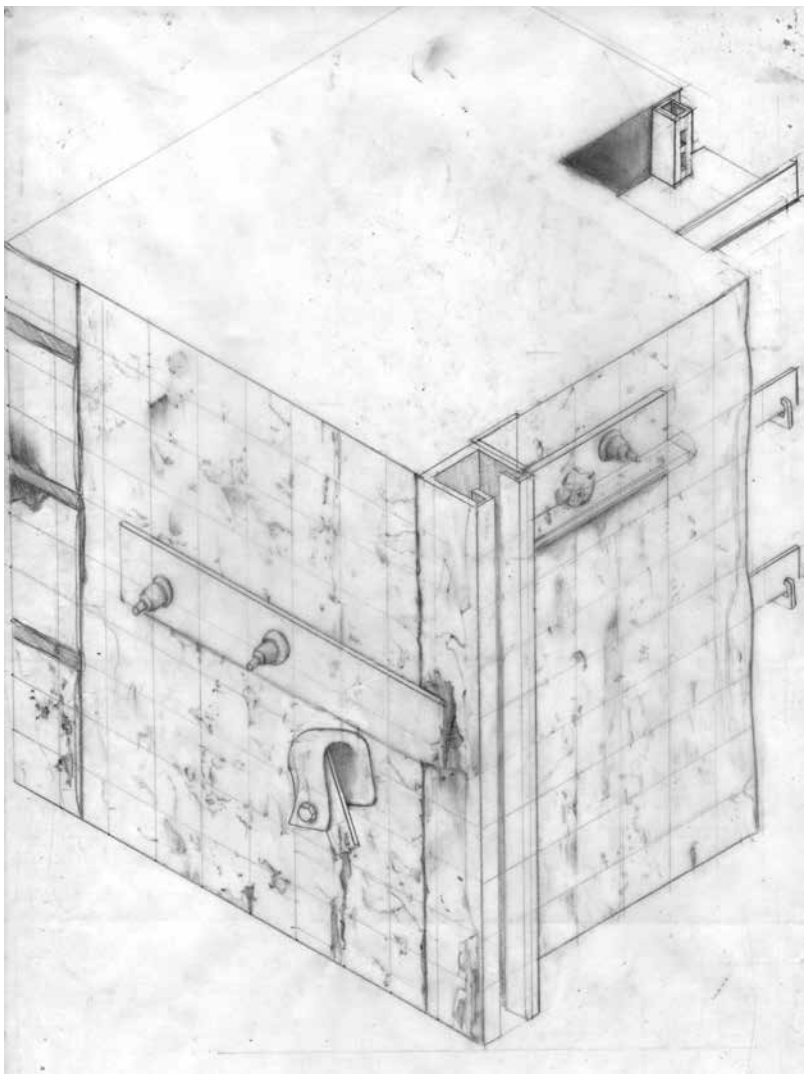

Figure 1 (Previous page): Vertical Studio *Qamarah' Eye* - 'City & the Interior', 2016. Photographic collection. *Source: Cheng Wai Yin, Lee Hiu Hei and Lai Hok Ming.*

Figure 2 (Current page): Vertical Studio *Verisimilitude*, 2018. Hand-drawn isometric. *Source: Cheung Tsz Ching, Lam Yeut Lai and Vong Ka Hei, 2018.*

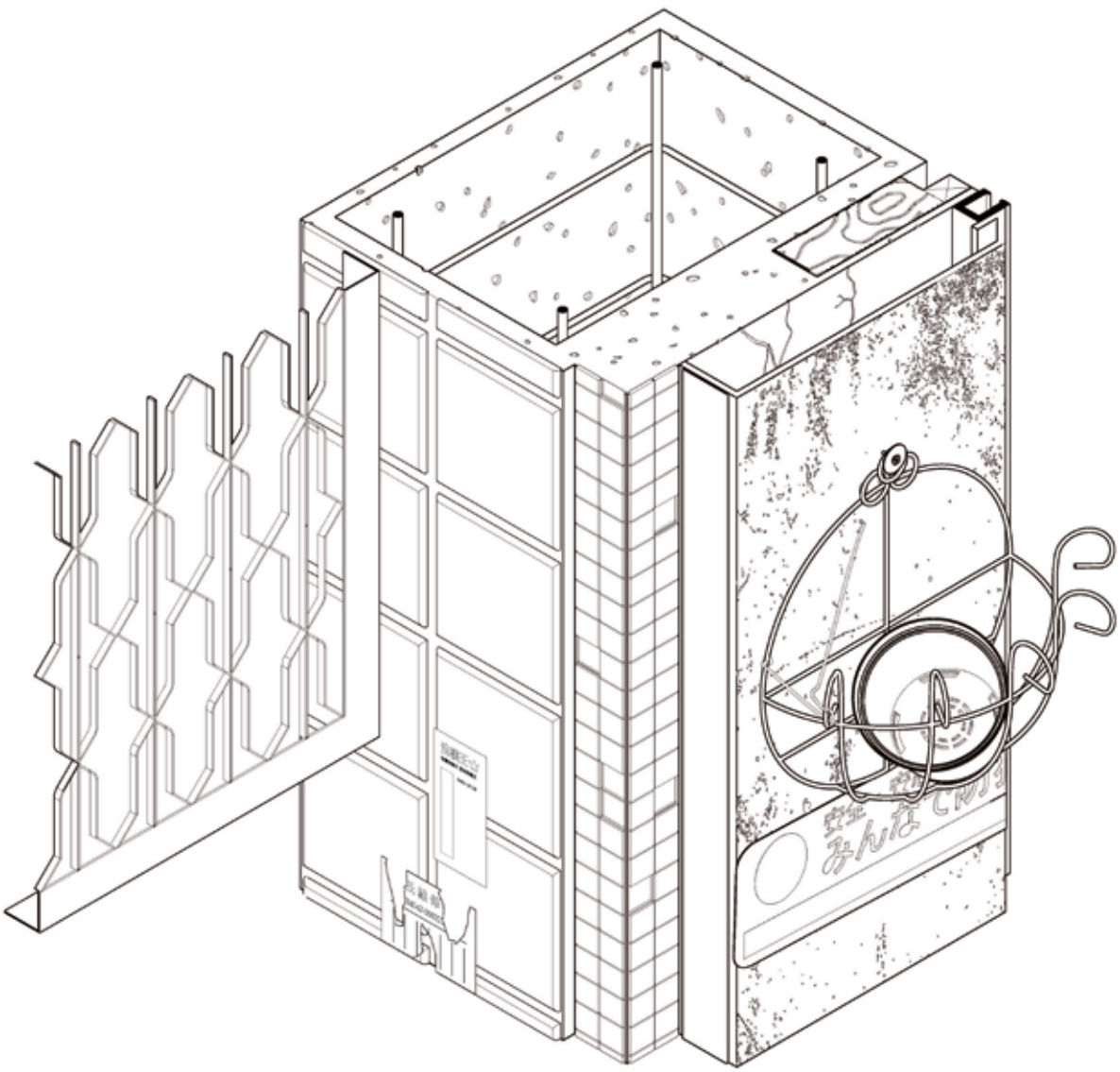

Figure 3: Vertical Studio *Verisimilitude*, 2018. Digital isometric drawing. *Source: Chou Yu Hsuan, Kam Kwan Yin and Wan Tsz Yu, 2018.*

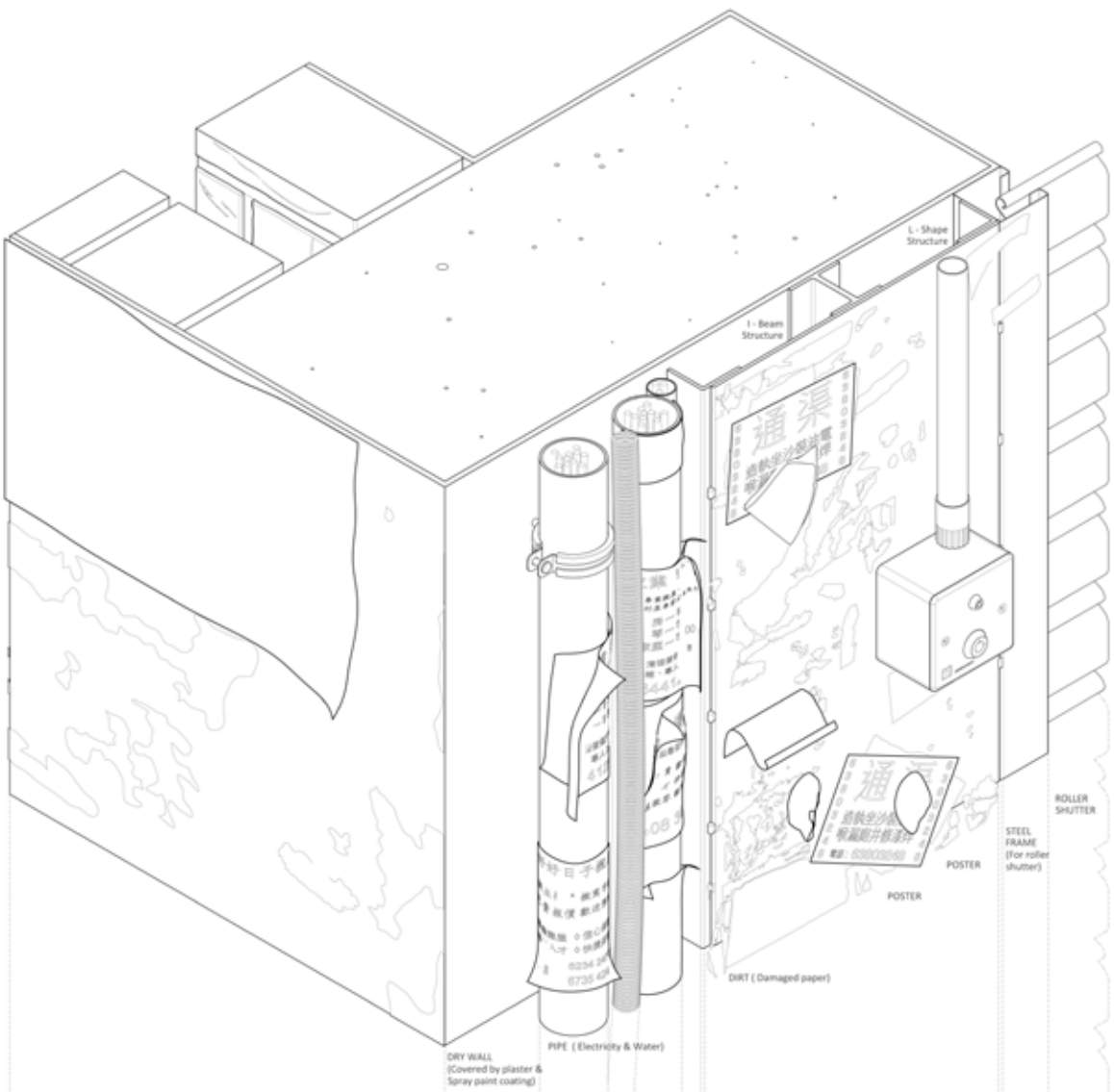

Figure 3: Vertical Studio *Verisimilitude*, 2018. Digital isometric drawing.
Illustration by: Tam Ka Man, Wong Yuling and Leung Cheuk Sum, 2018.

Bio

Anneli Giencke, is an architect Dip Arch (MArch), PGDip, ARB (UK). She studied architecture and interior design in Austria, Germany and London and received her master from the Bartlett School of Architecture, UCL. She has two decades of practical experience working in renowned international companies as a designer and architect including Plasma Studio and Wilkinson Eyre Architects (London/ UK). She is also a visiting critic to numerous international universities including the Architectural Association London (AA), Bartlett School of Architecture, University College London (UCL), Royal College of Art in London/ UK, The Technical University Berlin/ Germany, The University of Hong Kong and The Chinese University Hong Kong. Anneli taught at the Institute for Experimental Architecture / Studio 3 at the Technical University of Innsbruck/ Austria, and more recently at City University of Hong Kong, The Chinese University of Hong Kong as adjunct assistant professor and joint The Hong Kong Polytechnic University, School of Design in 2018. She also works as a freelance architect in Hong Kong.

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