




DESIGN/MAKE: AN ALTERNATIVE PRACTICE TO COLLABORATIVE LEARNING IN ARCHITECTURE



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ABSTRACT

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Positioned within the call for engaging students' learning in design-build and collaborative learning, architecture schools are fostering alternative practice in teaching and learning. By studying a real-life case study of the Pavilion NOW project, a three-year initiative (from 2015-2017) curated by Shalini Ganendra Fine Arts, in collaboration with School of Architecture, Building and Design, Taylor's University, this paper aims to provide an alternative practice for architecture education. This project was implemented for three years from 2015 to 2017, curated by Shalini Ganendra Fine Arts (SGFA) and with participation of approximately a group of 15-20 students from Taylor's University, School of Architecture, Building and Design. In order to achieve the aim, the case is studied through the reflective lens of the educator, interviews conducted with students, the architects and the curator. This paper will discuss the pedagogical aspect derived from the PavilionNOW initiative that constructs an alternative practice for collaborative learning in design-build programs, and outline its effectiveness and challenges. This paper suggests that an inclusive framework that includes the collaborative network of the architects, the curator, and the educator acts as an enabler towards students' learning beyond the discipline-specific knowledge and skills; with emphasis on students' disposition and attitudes that encompasses motivation, innovative thinking, self-management and social competencies, as well as the role of the individual within the discipline, and the society at large.

Contribution/ Originality: The study contributes an inclusive framework of design-build education for collaborative learning that is supported by the inter-relation between art, architecture and practice, in order to foster an alternative practice in teaching and learning.

1. BACKGROUND/ OBJECTIVES AND GOALS

Through the study of a real-life case study—the Pavilion NOW project, a three-year initiative curated by Shalini Ganendra Fine Arts, in collaboration with School of Architecture, Building and Design, Taylor's University—this paper provides an alternative practice for architecture education. Running from 2015-2017, the Pavilion NOW leads to a production of a pavilion space each year, which engages the notion of design/make, where the design activity is spearheaded by an appointed Malaysian practicing architect and/or designer. The exploration is a spatial and tectonic creation which seeks to celebrate local identity as the key driver for the production of architecture underpinned by partnership of students, art curator, and emerging architect/designer in practice. This

collaborative approach used in this project seeks to bridge the gap of the architect as a thinker and a maker, through the production of a pavilion that emerges out of the spirit of local material involving the conception and construction of a 'pavilion space' through a process that emphasizes originality, efficiency, materiality and economics. The idea behind the Pavilion NOW project is to creatively explore concept, space, materiality, contemporary and vernacular, and also for the first three years to recognize the quality of local architecture and emerging design talents.

1.1. Conditions for Architecture Education and the Call for Alternative Pedagogies

In the recent years, architectural teaching and learning have explored alternative approach that centres on design/build. This approach views architecture as a social agent for community building on one hand and an artistic endeavor of creative production on the other. In schools of architecture, design-build education has been a prevalent model. Recent studies have reported and discussed on the successes and challenges of the model providing motivations, practices, challenges, successes and failures associated with this popular and unique educational practice found in many architectural design programs (Canizaro, 2012; Gjertson, 2012; Gaber, 2014; Akerman, 2017). In practice, while many design/build approaches have proliferated over the past two decades, it emphasizes socially responsive architecture that celebrates architecture as a social art against the backdrop of a host of community-based architecture within the Asian region such as Andreas Gjertsen's Cassia Co-op Training Centre in Indonesia, Tyin Tesnestue's Klong Toey Community Lantern Project amongst others. Also, social enterprises such as Epic Homes (2017) in Peninsula Malaysia and Arkitrek (2017) in East Malaysia had been making their way into community-based architecture, attracting architecture students as volunteers, amongst others. With the increasing awareness and recognition of architecture and the humanities, there is a need for re-think of architectural education to respond to this alternative strand of architectural practice. Drawing inspirations from Kavanaugh (2010) architects are seen as humanists: "Architecture has historically been a profession derived from two traditions: the master builder and the humanist. The one is about "technique"; the other about being an educated person in society at large...is more textual and is contemplated, yet also ideally guided by wise teachers."

Situated within the call for engaging students' learning which engages with situations related to designing, making and collaborative learning, architecture schools should provide leadership in fostering alternative practice, and the Pavilion NOW resides at the intersection of the art and science of architectural learning through the process of design/make. Curated by SGFA, Pavilion NOW draw precedence from a host of Pavilion architecture/design that emerges from emphasis of economy, sustainability and materiality, aesthetics and space, emerging architect/designer, links to cultural and social activities and events, and collaboration with education. The precedence of such design/make initiative stems from diverse exemplary models of educational projects, competitions, and design and architecture festivals.

For example, in February 2015, the School of Architecture and Design at the University of Tasmania (UTAS) Launceston campus partnered with Sydney-based design practice Cave Urban to create the Hothouse, a temporary bamboo pavilion, as part of Tasmania's Museum of Old and New Art's (MONA) Dark Mofo annual winter festival in Hobart. Also, the idea of using Pavilion as a platform to explore ideas of architecture and the notion of making has been inspired by the Serpentine Galleries at the Hyde Park (since 2000) by which an architect who has not built in the UK, creates a usable space for people to gather and interact with contemporary art, music, dance and film events, and the gallery's annual summer Park Nights events (Serpentine Galleries, 2017).

Drawing from key Pavilion initiatives, the Pavilion NOW draws inspirations from the Le Festival des Architectures Vives (Festival of Lively Architecture) which has been run for a decade, and has been infusing contemporary architecture into the staid Southern French landscape through the creation of an array of artful temporary pavilions. Beginning in 2006 and 2013 respectively, the towns of Montpellier and La Grande Motte have played host to a series of structures designed to animate historical segments of the two cities. Founded with a

mission to celebrate the seminal work of burgeoning architects, the festival aims to produce meaningful and interactive works designed to activate the historic centres of the two ageing cities.

The impetus between education, emerging practices and temporal cultural activities is inspired by The Young Architects Program (YAP) (since 1998) began as collaboration between MoMA and MoMa PS1 to encourage emerging architectural talent (from students to well established architecture firms) to design innovative installations/pavilions that could be used as a shelter for summer gatherings (Museum of Modern Art, 2017).

Other precedence includes a design for a pavilion constructed out of recycled clothes hangers has been selected as the winner of the sixth annual City of Dreams Pavilion Competition (since 2009). The temporary structure will be built on Governors Island and available to the public for summer 2016, pending final approval and fundraising. Hosted by FIGMENT, the Emerging New York Architects Committee (ENYA) of the American Institute of Architects New York Chapter (AIANY), and the Structural Engineers Association of New York (SEAoNY), the competition speculates on possible futures with solutions to the current strain on economic and natural resources. Designers are required to consider their materials from sourcing to disposal, or ideally, reuse, promoting sustainable thinking.

Based on these exemplars, the Pavilion NOW initiative was conceived. Over three years, the initiatives have collaborated with various architects and designers, who explored different materials within the local context. This paper presents the pedagogical design of the initiative and its propensity to form education for architects

2. PAVILIONNOW: DESIGN/MAKE AND THE COLLABORATIVE EXCHANGES

Collaborative learning is an educational approach to teaching and learning that involves groups of students working together to solve a problem, complete a task, or create a product. It is based on the view that knowledge is a social construct, with collaborative activities based on four principles:

- The learner or student is the primary focus of instruction.
- Interaction and "doing" are of primary importance
- Working in groups is an important mode of learning.
- Structured approaches to developing solutions to real-world problems should be incorporated into learning.

Proponents of collaborative learning claim that the active exchange of ideas within small groups not only increases interest among the participants but also promotes critical thinking. According to Johnson and Johnson (1986) there is persuasive evidence that cooperative teams achieve at higher levels of thought and retain information longer than students who work quietly as individuals. The shared learning gives students an opportunity to engage in discussion, take responsibility for their own learning, and thus become critical thinkers (Totten *et al.*, 1991). When collaborative learning is expanded out of the classroom into situated learning, the learning experience is richer and deeper; Situated learning creates meaning from real activities where learning takes place through relationship between people and connecting prior knowledge with authentic, informal, and often unintended contextual learning.

Drawing from the key principles, Pavilion NOW project is set out to explore an alternative practice to collaborative learning. This paper uses the Pavilion NOW to illustrate how it can be used as an alternative practice in architectural education. The Pavilion NOW 2015–2017 incorporated design and build of a pavilion space through a collaborative partnership of art curator, students of School of Architecture, Building and Design, Taylor's University and emerging Malaysian architect/designer in practice.

The initiative positions the need to explore alternative architectural pedagogy, underpinned by the urge to make the world as our classroom; get out and about, to talk to people, to work with people, and to learn from people as part of architectural learning experience. This pedagogical test was implemented for three years from 2015 to 2017, curated by Shalini Ganendra Fine Arts (SGFA) and with participation of approximately a group of 15–20

Year 1- Year 3 students from Taylor's University, School of Architecture, Building and Design; each year examines different design ideals of pavilion and materiality which is driven by a selected emerging architectural/design practice. The three years saw design schemes developed by Jade Saw Architect in 2015, Eleena Jamil Architect in 2016 and Pow Ideas in 2017 each formed an explorative endeavor of different local materials, and engaged with different collaborative partner in support of project funding.

The process and outcomes for the Pavilion NOW initiative from 2015-2017 have been documented and disseminated through websites and catalogue. Besides capturing the process, the recording includes interviews and dialogues with student participants and the practitioners. Using the process and development based on my experience as a project supervisor from the School, this paper will propose a framework of alternative practice for teaching and learning in architecture. By synthesizing data from curators', participants' and practitioners' dialogues and testimonies, this paper constructs an alternative practice for collaborative learning in architecture and draws the values of this pedagogy by highlighting the effectiveness towards learning and its challenges.

3. RESULTS – THE ALTERNATIVE PRACTICE FOR COLLABORATIVE LEARNING

What is its pedagogical aspect derived from the Pavilion NOW initiative that constructs an alternative practice for collaborative learning?

3.1. The Framework

Based on my experience supervising the Pavilion NOW project, a framework that supports this teaching pedagogy can be derived. The framework stems from the inter-relationship between the learning provider, the curatorial support, the practitioner and the agent/funding. Although the roles and responsibilities overlap, there are central roles and functions of each stakeholder (Fig 1).

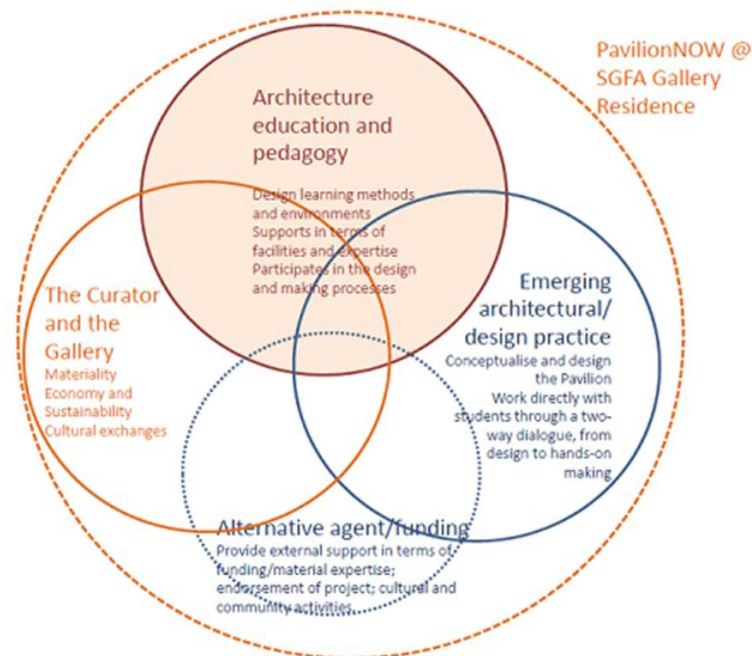


Fig-1. Collaborative exchanges framing the pedagogy for Pavilion NOW (Author)

The Curator and the Siting The curatorial position, i.e. its goal and philosophy, the centrality of its location is important in defining the shared vision of the project because the curator's role is to set directions for the design/make product. The curator's openness and accommodation to the requirements, particularly in terms of timeline, of the school is paramount for the effectiveness of the project. The role of the curator is also to seek

possibilities for publicity and sponsorship, as well as cross-disciplinary collaborations that integrates between art, architecture and communities.

For example, curated by Shalini Ganendra, the pavilion is sited in a living environment at SGFA's award winning Gallery Residence. Shalini Ganendra Fine Art is one of the most established galleries in Malaysia. Since 1998, SGFA's holistic approach to art representation and expertise in the contemporary art of Asian emerging regions has established the organisation's distinctive presence as a placemaker, advisor and culture pioneer. SGFA works regularly with established artists connected to South East Asia, and programs reflect a spectrum of international artistic and curatorial talent, with emphasis on the multidisciplinary. As a curator, SGFA defined the design brief, and curate programming for the 6 month period of the Pavilion stay includes art, performance and educational projects that incorporate the Pavilion into their respective genres for greater engagement.

The siting for the Pavilion is situated in the SGFA Gallery Residence, located in a suburban residential precinct, and designed by the Malaysian pioneering green architect, Dr. Kenneth Yeang from T.R. Hamzah & Yeang. SGFA as a gallery has always been in a residential setting to effectively present the idea of living with art—which was the original gallery platform. A public space that continued to marry the 'wellness' of living and creativity/exhibiting was a must. SGFA is a gallery residence that provides a platform for showcasing an eclectic range of art and design exhibitions—creating a contemporary arena for contemporary art—both locally and internationally.

The School and the pedagogy The School in liaison with the curator and the architect/designer develops the brief, the timeline, and confirms a recruitment of students to participate in the project. In essence, the School designs the learning experience. The collaborative and situated approach to learning offers a unification of craft and local materiality, exploration of material poetics and tectonics, and real-life engagement with practice that motivates students to make more impact than conventional forms of architectural pedagogy. While application of design and construction knowledge foregrounds the learning experience, collaborative and situated learning offers scenarios for students to acquire abilities such as innovative thinking, risk-taking, resource management, and demonstration of professional ethics and social competencies within the group setting. The role of the School in designing learning experiences through considerations of not only teaching methods but the learning environments for example the incorporation of the architects' office, the wood-working lab, the bamboo harvesting in the Indigenous village. It offers a holistic learning which primes the next generation of architects and designers to re-think how and why we build by connecting students to the client and their mission, practice and to construction materials and methods.

The architectural/design practice The architects/designers who lead the design/make should be carefully selected, with clear alignment of common interest and shared goals. While the design brief was set by curator, and the pedagogy developed by the School, the commissioned architectural/design practice conceived the concept of the pavilion design in response to the brief. It is important to note the diversity of practices and their diverse agendas of participation in the project, and key elements of explorations and innovations, and the engagement with diverse stakeholders are usually the key points that appeal them. The role of the practitioner is to offer a learning experience for students from the design ideation through to the design development and construction sessions, by which design negotiations which includes the students is central to engage students in the learning process at the onset of the project.

In 2015, Jade Saw, the principal of Q. Jade Saw Architect, was selected on the basis of their emphatic and tacit design practice, to create a distinctive installation that would extend the notion of pavilion. This inaugural pavilion, *I.M. Pulse*, elegantly credits the original and open brief, winding into a life-like form of open shelter, made of locally harvested, treated and crafted bamboo (Fig 2). The pavilion has been constructed with the expert skills of Orang Asli craftsmen, from locally sourced bamboo. Quoting Jade Saw (Shalini Ganendra Fine Arts, 2016):

“The realization of this installation represents a collective opportunity to explore and understand the relevance of vernacular building concept and materiality predominately appreciated by the indigenous peoples. Perhaps in the foreseeable future, Malaysian will have healthier choices for environmentally low impact and sustainable building strategies”.



Fig-2. I.M. Pulse by Jade Saw Architect (Powell, 2015)

Eleena Jamil, the principal of Eleena Jamil Architect, was selected as the architect for 2016 due to her ambitions of exploring local materials realized through her award winning Bamboo School, and recently completed Bamboo Playhouse. The Pavilion conceived as *Shadow Garden* pavilion is a temporary installation that sits in an intimate courtyard at Shalini Ganendra Fine Art's Gallery Residence which celebrates timber, Malaysian hardwoods of Merbau and Red Balau, as a local material (Fig 3).



Fig-3. Shadow Garden by Eleena Jamil (Construction, 2016)

While the 2015 Pavilion engaged indigenous peoples, the 2016 Pavilion involved the participation of Malaysian Timber Council (MTC), Malaysia's marketing art for timber and timber-based products who plays a pivotal role in promoting the use of timber locally. The structure explores the relationship between nature and building. A system of pressed galvanised steel shutters connected to planter boxes by ropes and pulleys are hung from a simple timber structure. The act of opening and closing the shutters moves the plants in steel boxes up and down, transforming the space within and around it with ever changing shadow play.

The shutters in operation evoke the idea of artificial sun shade in buildings, whereas the plants, a natural one - both very common, yet important devices for keeping spaces cool in the tropics. The installation also explores old building methods and the use of local materials in their most basic state. The main structure, for example, uses locally sourced wood in the form of rectangular timber sections that are mainly joined together using traditional woodworking methods called 'tanggap'. The metal elements are coated in zinc using a common process called galvanising, which can be described as one of the most basic ways to keep metal from rusting. A number of supporting programmes were developed for the Pavilion NOW 2016 including a Vision Culture Lecture, Art Hug Workshops, Tours and Exhibitions.

In 2017, the Pavilion NOW took a slightly different tangent, through exploring natural fibres as a material. Led by POW Ideas, the installation titled *Coir* showcased the potential and constructability of natural fibres (Fig 4). It represented the designer's material exploration on coir, a natural fibre extracted from the husk of coconut. Coir is sourced and processed locally. It is elastic, strong and hardly deteriorates over time while being water-proof and resistant to salt water. It also provides good heat and sound insulation while being lightweight and compact. The coir material was developed into a modular system and eventually into a three-dimensional experiential space specific to the domestic context of the gallery space. It suggested new material applications and also new forms of living environments. Through analog and computational manipulation, the pavilion is an encapsulation of design and local industrial processes suggesting contemporary applications of natural materials in both domestic and public realms.



Fig-4. Coir (SGFA, 2017)

Funding and Partnership with others In addition to the stakeholders mentioned earlier, funding and partnerships is an important determinant of the project as it drives the complexity and scale of the project, from monetary or material sponsorship perspectives. For example, the project also generated different relationships and dynamics

with partners and sponsors throughout the three years external partnerships and funding plays a significant role to ensure the sustainability and scalability of the projects. In the 2015 pavilion, the indigenous people from the Orang Asli Village in Gombak contributed to the craft-making and conveyed the techniques for exploration of the bamboo pavilion by Jade Architects, whilst in the 2016, the sponsorship from Malaysian Timber Council. They also become agents for dissemination of knowledge, for example dissemination of craft of indigenous people to education, dissemination of timber initiatives to education.

Based on the above, in summary, the process of learning in design/make is enabled through the inter-relation that is formed between the curator, the facilitator/school, the architect/design, and the funding stakeholders, and facilitated by structured approaches that are underpinned by collaborative and situated learning.

3.2. Key phases in Design/Make: A Structured Process and Approach

Besides the framework of stakeholders, the design and phasing of the project is important. Here, the School plays a central role in designing the structure and approach to students' learning. Drawing from the case study, the design/make of the Pavilion NOW is phased into five aspects: (1) Pre-Design; (2) Ideation and design development; (3) Prototyping and fabrication; (4) Construction; and, lastly (5) Art and Cultural Encounters.

3.2.1. Pre-Design

The pre-design phase is most rapid in order to set up feasible timeline and secure substantial funding for the project to take place, with consultations between the curator, the School and the practitioner to commence the development of the brief, and to secure agents for funding.

3.2.2. Ideation and Design Development

The concept of each year's pavilion is conceived by the architect/designer. Their initial conceptions allowed students to understand the tectonics of architecture, and how it relates to space, structure and form with further design development conducted with the architect/designer within the practice setting. The ideation commonly takes place in the practitioners' office where students participate in the design process engaging in producing sketches and mock-up models.



Fig-5. Design ideation sessions for Pavilion NOW2015 (SGFA, 2015)

3.2.3. Prototyping and Fabrication

Prototyping and fabrication took place off-site (for example, in 2015 fabrication took place in the Orang Asli Village in Gombak; in 2016 and 2017 prototyping and fabrication took place in the Wood-working Lab at Taylor's University) (Figs 6 & 7). Its main function is to explore the usage of materials, techniques of joints and creating mock-ups.



Fig-6. (left). Testing of bamboo at Orang Asli Village, Gombak for Pavilion NOW 2015 (SGFA, 2015)



Fig-7. (right). Prototyping and mock-up of Pavilion NOW 2016 (SGFA, 2016)

3.2.4. Construction

Ranging between 2-4 weeks, the construction is on-site at the SGFA Gallery (Figs 8 & 9), largely dependent on the material choices, culminating in a public exhibition.



Fig-8. On-site construction of Pavilion NOW 2015 (SGFA, 2015)

On site build

August 17 – September 5, 2016



"A lot of people think that architects only work in the office, but it's necessary for architects to develop their skill and understanding of construction through hands on work. Pavilion NOW has afforded us this opportunity."



Fig-9. On-site construction of Pavilion NOW 2016 (SGFA, 2016)

3.2.5. Exhibition, Art and Cultural Encounters

During the five month exhibition period, the Pavilion NOW 2015 project incorporated a selection of sound artwork by acclaimed NZ artist, Paul Timings. Timings was Artist In Residence at SGFA for three months under an award from the Asia New Zealand Foundation.

The 2016 pavilion incorporated important landscaping elements, starting with a kitchen garden. The twelve hanging planters contain various herbs (ulam) used in traditional Malaysian cooking (Fig 10).



Fig-10. Ulam as part of Pavilion NOW 2016 (SGFA, 2016)

3.3. Effectiveness and Challenges of Design/Make

Having pointed out the four key composite of the collaboration and the need for a structured process, the following section discusses the effectiveness and challenges of such pedagogy.

3.3.1. Values of Learning

Bringing innovation to the foreground through the exploring of material and techniques, each successful installation champions a sense of wonder, a commitment to craft, and an honesty of material expression. Each failure contributes to a growing body of knowledge produced, and confirms the role that the design process plays in the advancement of structural inquiry. The hands-on experience of students handling the material extends their otherwise fictitious knowledge on materials, and the assembly. Students commented:

“This is my first time experience building anything! It’s fun to be able to do a hands-on project and get your hands dirty, where we can experience things that you can’t in the classroom.”

“A lot of people think that architects only work in the office, but it’s necessary for architects to develop their skill and understanding of construction through hands on work. Pavilion NOW has afforded us this opportunity”.

Overall, this alternative practice in the education of architecture students provides a broadened perspective of architectural production, expanding the learning attributes beyond knowledge and skills, but dispositions of the individual students. Reinforcing the benefits of collaborative learning, students engage in discussion, take responsibility for their own learning, and thus become critical thinkers.

One student who participated in all three years commented, “Over the past three years we grew and became very independent with the SGFA Pavilions.”

3.3.1. Divergent and Innovative Thinking

The Pavilion NOW commenced with open possibilities, and followed through by grounding it to reality, hence promoting divergent and innovative thinking in the solutioning, which subsequently led to evaluation of solutions in order to meet requirement of cost and time. Both the practitioners and the participants alluded to the openness of the brief, and the need to consider the practicalities and efficiencies of the project:

“The brief given to us was pretty open-ended. For us, a small pavilion type project such as this, allowed us to be quite indulgent, and free to explore different ideas and forms. The possibilities were almost limitless, but we knew we had to have some sort of starting point.”

“Seeing the whole thing come together was exciting. Initially everything was just stacks. You see the renderings and do the drawings but you cannot fully appreciate the scale and complexity of the project until it all comes together”.

Despite the positive outcomes, there are challenges and limitations of the Pavilion NOW.

3.3.2. Pressure within Collaborating Team

Firstly, as pointed out, the project output is determined by the dynamics and the relationships of the collaboration. It is often a challenge in developing such pedagogy due to pressure within the collaborating team to fulfill different goals: the curator from an artistic and cultural endeavor; the School from an educational and pedagogical perspective; and the practice that sets out to explore potentialities of local materials through artistic and opportunistic interventions.

3.3.3. Constraints on Budget and Sponsorship versus Schedule

Secondly, contrary to hypothetical academic exercises, real-life projects are commonly more demanding with time and budgetary constraints. The curator has specified an inception and selection of architecture/design practice beginning from November to April the subsequently year; followed by negotiation and discussion, as well as securing funding till June. The preliminary discussions on design occurred from June to July, leading to the actual construction on-site in August. The school having its own academic timeline is challenged by the need to balance between on-site academic lessons and off-site collaborative learning. And, the architecture/design practice having its commercial demands, often has limitation of time and manpower to support and facilitate the life-span of the project.

Thirdly, with economy and sustainability being a flagship spirit of the Pavilion NOW, the funding to support this initiative is crucial to the success of the project. While many would find Pavilion NOW a compelling initiative, many negotiations have taken place prior to confirmation, making the funding a critical point which dictates at times the scheduling of the project.

In conclusion, while this pedagogical approach generates its own limitations and difficulties, the alternative practice allows more meaningful pursuit to craft and engagement, and a collective ownership towards the Pavilion NOW which led to deep learning. Building from the 3-year initiative, the practice derived from Pavilion NOW has the propensity to pave a starting point towards an inclusive architectural education, which provides a learning environment which is at once real and experiential. While the core of the initiative is to enable learning, it has “taught” beyond the discipline-specific knowledge and skills; with emphasis on students’ disposition and attitudes that encompasses motivation, innovative thinking, self-management and social competencies, as well as the role of the individual within the discipline, the society at large.

The architects, the curator, and the educator form a collaborative environment that becomes the “teacher” to the students by which this alternative pedagogical practice allows for more meaningful learning. The process to the production of the pavilion creates the learning experience structured by the educator and facilitated by the architect in varied learning environments such as the carpentry workshop, the architects’ offices, the lecture studio, and the curatorial grounds of the gallery. Beyond learning, this initiative provided a platform for collective ownership towards production of knowledge through the pavilion. Students are empowered in the process of knowledge production, in both the designing and making of the pavilion. Future endeavors can explore potentials of incorporating in into the curricular, and the scalability of the project which is labor-intensive.

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