

Trees and Rhizomes: Students as Masters of Learning

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Abstract

This paper analyzes an innovative university based studio based learning program, called the Bower Studio, that offers architecture students real-world experience in consulting and building consilience with client partners from marginalized and poorly resourced communities in remote Australia and Papua New Guinea. It both documents the strategies used to build meaningful, cross-cultural partnerships and sets out this innovative approach informed by relevant post-graduate learning pedagogies. Students participate with a unique and powerful learning experience that perturbs their typical day-to-day experiences by introducing them to real world issues of inequality, race, poverty and marginalization. Students are quite confronted by the contemporary Indigenous world and the lifestyles of Indigenous people. This culture shock is however quite empowering and invigorating – forcing students from their comfort zones to address a raft of complex issues. The consilience of a number of factors, many of which are generated by the students themselves as they work with their partners, are best understood in a non-hierarchical pedagogical framework best described by theorists such as Deleuze and Guattari as ‘rhizomatic’. The paper demonstrates that students have great capacity to dismantle the barriers between the ‘academic’ and ‘real’ worlds and take significant responsibility for driving projects to their fruition and guiding their own learning.

Keywords: Design studio pedagogy, consilience, marginalized communities, Bower Studio, Indigenous development

1. Introduction

The typical architectural design studio education involves the academic studio leader creating hypothetical scenarios and an imaginary client for the class of students to design 'solutions'. The studio leader is most likely to provide the students with a written brief and program. Students may, or may not, be able to visit the proposed site and will most commonly rely on their web-based research to imagine the needs of the client and search for appropriate precedent on which to model their own scheme. This constrained process limits the 'real-world' interaction between designer, client and site that practicing architects grapple with on a regular basis and rarely addresses key issues of constructability, process and budgets.

By contrast the Bower Studio model was initiated in 2008 as a design studio bringing together groups of students to work directly with indigenous groups in remote communities in Australia, Thailand and Papua New Guinea to improve housing and infrastructure. In this distinctive format, the students take a project through to construction and delivery of these infrastructure elements, working with the communities to frame the aims of the project and achieve their desired outcomes. Together, the teams have built a variety of much needed community infrastructure in eight different locations. To date, they have renovated houses, constructed an early childhood learning center, a computer center, additions to a health clinic as well as provided healthy toilets and water infrastructure. This series of studios has provided students with transformative learning opportunities where they take much responsibility for the learning and teaching that occurs within the design studio. This learning has been facilitated by extensive collaboration with government and indigenous development agencies that have provided guidance and facilitation, as well as industry partners who have supplied materials and technical support. Formal teaching and learning strategies, that have been the mainstay of studio teaching for generations, must be reconfigured due to the open-ended nature of the projects and the gradual, complex and ongoing nature of the collaboration of the parties involved. The overarching question we keep in mind is: *Given student's desires to participate in complex 'real world' problems what are the most appropriate models for teaching and learning?*

2. How Does the Bower Studio Operate?

2.1 The 'Bower'

A 'bower' is a simple structure traditionally used by indigenous Australians to shelter from sun, rain and wind. The 'Bower Studio' projects undertaken by postgraduate students at the Faculty of Architecture, Building and Planning at the University of Melbourne reference the bower as the basic component of shelter and seeks to build upon its relevance for contemporary indigenous development and housing in Australia and neighbouring countries. While a basic bower structure may not represent the aspirations of all indigenous peoples, it does help us understand the key issue of shelter for the climate, culture and technologies (which in turn link with spatial forms and their capacities to define 'place'). In many respects the bower is a powerful metaphor for the pedagogical approach that grounds the Bower Studio's teaching and learning practices. The bower is a gathering place for the coming together of peoples in teaching and learning across contexts and cultures, but with disciplinary purpose.

2.2 The Bower Experience

The Bower Studio is committed to providing students with a unique and powerful learning experience – our initial approach is to perturb student's typical day-to-day experiences by introducing them to real world issues of race, poverty, inequality and marginalization. We look to readdress issues of 'top-down' engagement and poor communication. Students are initially quite confronted by the contemporary Indigenous world and the lifestyles Indigenous people contend with. This culture shock is however quite empowering and invigorating – forcing students from their comfort zones to address the complex issues. We do not shy away from their discomfort and endeavour to keep the interaction as real, and sometimes as raw, as possible.

The co-constructivist learning and teaching philosophy for the Bower Studio uses the physical construction processes and outcomes as a way for students to stimulate ongoing discussions with our indigenous partners. Co-constructivism in education has recently been characterised by various contextual aspects of co-constructive activity including: 'productive dialog such as exploratory talk and collective argumentation, collaborative negotiation after sociocognitive conflict or as a process of reciprocal sense-making, joint construction of a shared understanding, elaboration on mutual knowledge and ideas, giving and receiving help, tutoring and scaffolding'(Reusser 2001). Generally speaking, students find it difficult to build opportunities to engage with people from marginalized communities. Similarly, marginalized peoples find it difficult to make decisions about their environments and their community infrastructure. Our Bower projects address these difficulties by enabling a process whereby talking, designing and then building together opens up opportunities for useful dialogues leading to new ideas, processes and ultimately relevant outcomes tailored to the needs of the communities by well-informed student designs. With each project the Bower team grows stronger and we achieve better results. Our Indigenous friends are also gaining communication skills and confidence with practices to improve their own infrastructure and their own community programs. We are all learning together.

The Bower Projects attract students wishing to engage with and address inequality, hardships and the barriers to Indigenous development. It has traditionally been very difficult for non-Indigenous people (particularly those residing in Australia's southern states) to have the opportunity to work with Indigenous communities. However our Bower Studio program is one of the very few in Australia that has been able to provide these opportunities – due in part to our development of strong partnerships with Indigenous organisations.

2.3 The Student's Obligations

In recognition of the experience and prior learning of our postgraduate-level students and our own high expectations at this point in their learning, we have designed this studio so that students progressively take on increasingly significant responsibilities as the project proceeds. This is accompanied by a gradual diminishing of the subject coordinators leading role. The pedagogical aim here is to have students graduate from the subject as leaders in the disciplinary field with a strong philosophical and ethical basis for influencing future initiatives, a strong skill set and the intellectual basis to have their voice heard and actions identified as a model of best practice.

The Bower Studio leadership team has found that it is not difficult to motivate students to learn and to participate. Projects begin with idealistic student input that is instituted at first within tight frameworks and with tight leadership control. As the project progresses and the students build confidence and knowledge the project processes become more self-directed. The students are well prepared for the consultation processes they undertake and are taught ways to ask questions and the importance of listening carefully with their 'clients'. After their consultation with the community they have strong commitment to the final projects and encourage local community members to work alongside them.

Conversations with the student cohort have indicated that the students are keen to engage with Indigenous Australians. For most this is their first opportunity to do so. Students wish to go beyond formal conversations and engage with community members as individuals and in informal settings. For the local Indigenous students alike, it broadens their horizons and facilitates their positive engagement with 'whitefellas' of their own age. The combined groups break down barriers of preconception and difference.

2.3 The Studio Processes

Prior to working on-site with communities the architecture students are invited to work in groups to design and document prototypes and then pass these to their peers for actual construction. Again this 'problem based learning' pedagogy is not new to the university but it does work very well with this type of project. Students learn to take high levels of responsibility, respect another's design and appreciate having their ideas built by others. They also respect and expect good documentation from their peers. These processes of negotiation provide a forum for students to set clear goals for their learning, work constructively with their Indigenous partners and work to produce fruitful and sustainable outcomes.

Our students are well trained in Indigenous protocol issues, design and construction before arriving on-site to work in communities. Alongside formal lectures and guest presentations the students prepare their own seminars, design prototypes, document the construction process and schedule and source construction materials. They are then able to confidently begin prefabricating building elements in the university workshop. Once the prefabricated components are complete the teams move to the university's rural campus at Creswick for on-site construction training. Here the students gain confidence, familiarity with the tools and materials grows and their problem solving skills are put to the test over a three-day period. These preliminary exercises lead towards the main component of each project – students forming partnerships to work outside the university on outreach projects with the Indigenous partners.

The local Indigenous students, studying for their trade certificates and finding their feet in the workplace, have also commented on the learning processes they use to work with the 'whitefella' students. Both the local workers and university students are required to find new ways to engage and communicate with their clients and workmates. From this process many strong leaders emerge and we take advantage of a mentoring system. Of key importance to our program is for high achieving university students to be able to provide intellectual leadership and go on to mentor students participating in following Bower Studio projects. These student mentors,

generally one or two per year, remain connected with the program. We endeavour to empower them as much as practicable and rely upon their expertise to maintain relationships with our large number of partners.

3. What Sets the Bower Studio Apart?

While other Australian and International universities have subjects with significant Indigenous input and themes, this project is innovative in its strong reliance on student input and activity. Furthermore the Bower Studio builds on the traditions of Samuel Mockbee's 'Rural Studio' where students consult and build for the poor and marginalized in America's south. In both studio programs the student's physical labour leads towards the built outcome alongside the client's own input and 'sweat equity'. However, there is another, even more important aspect to the Bower Studio program: along with a sense of responsibility to provide sustainable infrastructure to the Indigenous community with which they are working, the teachers also ask students to be responsible to their future colleagues – they are required to share their intellectual output, in the form of research, consultations, designs and reports, with the following year's Bower students. Student mentoring has a significant value. Without this, the studio would not have the basis to form the following year's projects. Students are thus engaged in and have membership of several overlapping learning communities at once: with their own year's cohort, with the Indigenous community they work with and with the following year's students.

3.1 Inverting the Process – Building and Consulting Before Designing

A key feature that distinguishes the Bower Studio from other projects that have students construct buildings is our desire to empower students to make well-informed decisions over a protracted time frame. Unlike the standard design process, which has students designing and then building, we have inverted the process so that students begin by engaging with their client and taking part in the building process simultaneously. Only once they have this experience do they undertake the major design work and produce a proposal – presented as a ten-page booklet with full documentation and budgets. These design proposals are then disseminated to our partner organizations to help them choose the next project for construction. Hence each cohort of students can strive to have their design proposal selected for construction and win the opportunity to help mentor and lead the new cohort of students. This reliance on student leadership has enabled us to build a strong team of committed and enthusiastic students who remain connected to the projects and outcomes over consecutive years.



Figure. 1 Each new student cohort does not prepare any formal design submissions until they have completed the building stages alongside their new clients.

3.2 Knowing ‘How’

Professional schools, and architecture programs within them, traditionally view a significant part of their role as teaching to transfer information. Preparing students for professional life requires a great deal of content-heavy instruction relevant to the particular discipline and professional accreditation bodies see their role as ensuring that regulatory standards are maintained. Schon (1987) explains this as a state where ‘Knowing that’ tends to take priority over ‘knowing how’. However design pedagogy has long been centered on ‘problem based learning’ strategies with the accompanying range of learning techniques that include peer learning and collective, collaborative teams working to ‘know how’ (Boud & Feletti 1997, Hmelo-Silver & Barrows 2006).

Furthermore, the importance of ‘tacit knowledge’ as complementary to ‘codified’ or ‘explicit’ knowledge (Polanyi 1967) is a central concern in architectural design studio pedagogy. Tacit knowledge is the underlying practical ‘know how’ knowledge that is difficult to put into words and is mostly learnt through ‘communities of practice’ (Wenger 1998). Ways of knowing and knowing how are co-implicated - each is recursively implicated in the other to allow learning to evolve and progress. These complex and interrelated ways of knowing underpin teaching and learning in the design studio where students’ working collectively is regarded as the most sophisticated model for learning about design.

3.3 Broad Stakeholder Input Affirms Quality

Facilitating the interaction between students and Indigenous communities is a highly rewarding intellectual pursuit for the academic team. Although there is a broad range of interests and concerns represented at various stages, uniform ways of benchmarking quality and success remain – we require rigorous evidence-based research and seminar presentations of a high standard. Panels of academics, community representatives and funding agencies assess submitted design work and provide invaluable feedback to the students. Such assessment affirms the authenticity of the project learning process through real-world evaluation procedures and feedback on the merits and issues of design proposals. The quality of this work – in both its content and presentation – equals and even exceeds that of professionals in the field. Most importantly the work has been prepared in a consultative framework.



Figure. 2 The students gain a great deal of tacit knowledge building their relationships with a range of stakeholders.

3.4 Encouraging Informal Interaction for Enactive Learning

In addition to affirmative action in formal academic activities, we also encourage additional less formal, less traditional academic pursuits within the Bower studio. Time spent with our community partners playing football, introducing children to painting (and cleaning paintbrushes) or just informally chatting is encouraged. The interpersonal relationships that are built between the students and the community are recognized as a significant part of the learning experience for all and are valued alongside the academic pursuits and the completion of the built structure. Educational research affirms the high value of 'enactive' approaches to learning that, by combining reflection with physical activities, can affect learning engagement and retention (Varela *et al* 1991). In discussing a personal view of enactivism, Begg (2000) notes: 'it is not knowledge-as-object but knowledge-as-action'. Begg's view affirms the generative, interrelated actions of knowing how and ways of knowing.



Figure. 3 The wider community enjoyed participating in the construction process.

3.5 Making Teaching Appear Invisible Through Learning Engagement

Students participating in the Bower Studio are selected on the basis of demonstrating their commitment to issues of community development and empowerment. Peers who have previously completed the program, and the student mentors who shepherd the new cohort, clearly outline the obligations and responsibilities students will face during the studio program. It is important for students to understand that expectation of their contribution is not only substantial but is also taken very seriously by the Indigenous stakeholders and their support agencies. Consequently the students become very involved with the program and focused on achieving the built outcomes as well as contributing intellectually, and possibly even physically, in the ongoing projects.



Figure. 4 Three composting toilets were built in Papua New Guinea with students taking more control of the process as the construction phase moved forward.

The key to facilitating independent learning is to providing the space for the students themselves to drive their own response to the learning task at hand, in other words to practice self-initiated learning (Swann 2012). Within the Bower Studio structure the staff take a very active and engaging role at the beginning of the project but deliberately and progressively step back as the project proceeds. By the end of the on-site construction phase the teaching team aims to become invisible leaving the student team to 'complete' the building phase alongside the local workers.

3.6 Dual/Oppositional Orientations and Rhizomes

Schon (1987), writing about educating the reflective practitioner, criticises the dual orientation of the Professional School that has a binary relationship within the world of the university and the world of practice. He characterizes this binary as a tension between 'discipline' and 'practice' based orientations. This is frequently observed in architectural education where rigorous intellectual pursuits sit in parallel with the multifaceted demands of the physical world that includes a range of clients, pragmatic issues related to site, climate, construction technologies and materials and the economics of the construction process.

The Bower Studio model addresses Schon's (1987) concerns in an easily reconcilable manner. Rather than regarding the disciplinary and practical orientations as a polarizing disjuncture between the two it prefers to see both as co-involved in a dynamic process that is actively contiguous and intertwined. Throughout the project the students use the knowledge obtained through the theoretical interrogation of the subject matter and layer this on top of the work they conduct 'in the field' to form a non-hierarchical, dynamic 'rhizomatic' model. Deleuze and Guattari (1987) describe such a model that contrasts the hierarchical, bi-polar, closed system structure of the tree – practical v disciplinary – with the arrangement of a botanical rhizome as an open system that continuously propagates in many directions and dimensions without any definite beginning or end. Snippets of the classroom based research and learning become layered onto each day's activities on-site and help inform the myriad complex negotiations between the key client interactions, the construction processes and the vision of the completed building as a relevant artifact. These negotiations, in turn, are then brought back to the design studio at the university when they are ordered into a design submission, which is then in turn, taken back to site to form the basis of new negotiations with the partner community.

It is this strong recursion through cycles of reflective disciplinary understandings, active practical experiences, collaborative negotiations and cooperative actions, forwards and backwards over time, that empowers the students, the partner communities and the overall ongoing projects alike. The relationships are seamless and transparent and readily understood by all.

4. Conclusions

For five years spanning eight projects and across three countries, the Bower Studio has successfully completed cooperative planning, design and construction over a range of infrastructure programs. University students, including students from host countries, work alongside community groups and with the support of industry partners and both the government and non-government sectors. These teams have been highly efficient and organized to work within budgets and against strict timelines to achieve their goals.

The projects combine both teaching/learning objectives alongside research outcomes addressing the most sustainable ways to develop relevant community infrastructure. Of key importance to the academic leadership team is the need to develop a powerful model for high quality learning.

The Bower Studio pedagogy is woven from three complementary approaches: Knowing how, ways of knowing, and enactivism, which re-prioritize processes of learning and experiencing 'how' over the 'what' and 'why' explicit knowledge transfer pedagogies of the professionally focused architecture school. While we argue that both tacit and explicit knowledge are very important and highly relevant to design students we believe that there are few programs where this occurs in an intellectually and operationally robust manner. In our experience a 'rhizomatic' approach that embraces open, inclusive and flexible ways of knowing and working, affords a more consilient alternative to the limitations of the 'discipline' and 'practice' binary. We argue that students are most empowered and effective when the barriers between the 'academic' and 'real world' events are dismantled thereby providing the opportunity to move back and forth weaving the worlds together and taking the responsibility to drive the project to fruition.

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