TIMBER AND ARCHITECTURAL EDUCATION – A CASE STUDY IN
‘LEARN BY MAKING’

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ABSTRACT: The education of architects has become synonymous with a focus on digital design and modelling. This paper explores the emerging practice of incorporating a ‘learn by making’ approach to architectural education through a combination of analogue and digital design, fabrication and the onsite installation of permanent and semi permanent timber structures.

KEYWORDS: Timber design, learn by making, architectural education

1 INTRODUCTION

Until recently, few undergraduates of architecture experience their craft through a ‘hands on’ approach to architectural education. The modern ‘learn by making’ teaching method fuses both traditional and contemporary timber construction methods and is gaining popularity amongst both architectural students and educators. Exposing architecture students to a real client and brief in a controlled environment, culminating in a full scale permanent structure, can be an effective tool in preparing tomorrow’s architects for timber’s burgeoning renaissance.

2 METHODS

The subject of this paper has been inspired by the ‘learn by making’ approach at universities such as the Norwegian University of Science’s Faculty of Architecture and Fine Art [1], the University of Tasmania’s timber based architectural program and digital fabrication workshops [2], and the work of Emeritus Professor Naoto Ando at Tokyo’s Engineering and Construction Department [3]. Timber’s unique properties make it the ideal material to consider when undertaking a ‘learn by making’ approach to architectural education. Its workability, strength to weight ratio, ready availability, open design capacity and established place in society make it the ideal material from which to base a modern ‘learn by making’ architectural program.

2.1 Precedent ‘Learn By Making’ Experiences

In 2010, a ‘learn by making’ exercise was jointly run by the author with Dr Andreas Falk at Sweden’s Royal Institute of Technology (KTH) School of Architecture and the Built Environment in Stockholm. This ‘learn by making’ exercise was incorporated into an Architectural Technology unit entitled Translated Structures and Material Combinations. The course focused on the use of timber as a structural material in architectural design and culminated in the students building a full-scale timber box beam grillage structure.

3 RESULTS

3.1 Timber in Architecture – An exploration of timber design, construction and installation

Following on from the KTH experience, the author conducted a dedicated ‘learn by making’ elective for 5th year Master of Architecture students at the University of Western Australia’s (UWA) Faculty of Architecture, Landscape and Visual Arts (ALVA) in the first semester of 2013, entitled Timber in Architecture – An exploration of timber design, construction and installation (ARCT5597). The elective’s goal was for the students to design and construct a permanent structure with the intent of fostering an appreciation for timber as a structural and aesthetic building material through design, fabrication and implementation via a project based, hands on process. The class was divided into eight groups to develop a range of proposals. The various solutions explored timber construction through sketches, analogue and digital model making and scaled prototyping.
This approach successfully culminated in one student project being selected from the group through a competitive design process. The eight proposals were assessed by a design review committee comprising the client, one of the industry sponsors, ALVA’s Associate Professor Patrick Beale and the author. Consideration was given to issues such as addressing the brief, build-ability, structural logic and the quality of detailing. The winning solution was then to be built by the class at ALVA’s workshops and installed on site as a permanent structure.

3.2 THE PROJECT

A primary school in the southern suburbs of Perth in Western Australia kindly provided the project on which the elective was based. A communal garden had recently been established at the school to provide students the opportunity to experience fruit and vegetable gardening, poultry care and aquaponics. An outdoor cooking area had been previously established with a slab, power, water and gas services. This location created an opportunity to incorporate a central open pavilion structure to provide much needed shade and act as a focal point to the garden.

The university students surveyed the site and met with a class of grade three students and their teachers to discuss the project and create the design brief.

3.3 THE OUTCOME

The eight designs developed by the students represented a broad range of solutions, many with commendable attributes. Each group researched and investigated a number of timber based precedent projects. The winning scheme referenced the three dimensional timber grid structures of Keno Kuma’s Wooden Bridge Museum and GC Prostho’s Museum. The class first built a full scale prototype to resolve the fabrication process and review the connection details. The prototype structure provided a valuable test bed for the students to experiment with the process of converting the abstracted drawn forms into a three dimensional object.

This process provided them with valuable insights into the task builders face when given a set of plans to interpret.

Following the successful prefabrication of the primary structural elements and their subsequent installation at the site, the completed project sits aptly in its new surrounds and has become an integral part of the school’s garden.

4 CONCLUSIONS

The process of modern ‘learn by making’ in architectural education is a valuable educational tool and is becoming established in a growing number of architecture schools worldwide. Securing industry support can result in broadening the learning experience for the architectural students by fostering university and industry collaboration. The students involved in the Carey Baptist College project benefited greatly from the experience and have gained a deeper understanding into the unique properties of timber as a structural and aesthetic material.

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REFERENCES