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## Architectural Design Pedagogy: Improving Student Learning Outcomes

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### Introduction

The design studio lies at the heart of architectural education where learning through a well-documented pedagogical process of 'learning by doing' forms the primary student experience. Architectural education is necessarily imperfect. Teaching architectural design means different things to different people; each educator teaches according to his/her own set of ideologies and beliefs and in a manner that is distinct from others. Concomitantly, there is a tremendous diversity of contents, areas of emphasis, and methods of teaching in different schools and even within one school (Salama, 2006).

At Coventry, like many schools of architecture, the design studio is the meeting point where what is learned in all the subjects is demonstrated. However, as a new course we are aware that in our efforts to establish a course which meets the requirements and criteria of not just the ARB and RIBA but is also a reflection of our own aspirations in the teaching of architecture there may be a disconnection between the teaching and learning occurring 'outside' in taught modules and that which takes place within the design studio. This can result in a failure to transfer relevant learning, skills and understanding to design projects through effective discussion and feedback seeded by the material delivered in taught subjects. Where Cultural Context and Technology are taught as part of the architecture course, the design studio ethos may fail to support or draw on their learning outcomes (and vice versa) and therefore isolate, undermine or marginalise this part of the curriculum.

If we accept that the pedagogical approach of the design studio gives us the best opportunity for teaching architecture and all aspects of architectural ideas, including formal aesthetics,

building technology, theory, history and practical skills such as drawing or model making, it follows that there is merit to finding out how learning effectiveness in taught subjects can be maximised by extending its influence.

An often-tenuous connection between design modules and taught modules can mean that information is a lot about broad principles and ideas and lacks the focus of a specific application to the students' design project. Often these 'taught' modules are delivered by specialist tutors, who may differ from those delivering studio projects and their ability to reference specific aspects of design projects may be compromised as a result. The results emerging from our initial module evaluations, feedback, student forums and personal tutor groups, has demonstrated that the students are frustrated by the poor relationship between taught modules and their work in studio. Repeatedly the criticism was not about the specific delivery or content of these modules, but 'how do they inform my design projects?' and 'how are they relevant to my work?' This study has endeavoured to find out how we might improve the students' learning experience by strengthening the link between taught modules and studio projects.

The purpose of this study is to investigate whether the Cultural Context and Construction, Technology and Environment modules taught to undergraduate architecture students are transferred into their studio work. It also attempts to identify how changes to the teaching and programme can strengthen this relationship.

### Background

The status of design education generally and the design studio especially, appears to have reached a critical stage at the present time and many writers agree that radical changes have to occur. What can be argued is design education has suffered from a lack of intellectual rigour which has in part been caused by the subjective knowledge and irrational creativity that have existed at the core of design process in the design studio.

Often an emphasis on original and 'creative' designs outweighs designs which 'work' (serve functional requirements, are buildable, etc) and

students imitate the style of fashionable architects without understanding the context of their creation, the implications for users of their project or the appropriateness of their solutions for the local context in which they are placed. In this situation less experienced students view architectural design as an opportunity to express their inner creative urges, rather than as a challenge to resolve a complex set of technical and social issues (Gross and Do, 1997). Architectural instruction further aggravates the problem whereby in many architectural schools, teaching is divided between the design studio, where the design projects are 'tutored' and lecture-based modules where the historical and technical subjects are 'taught'.

Considering a taxonomy of educational objectives, Bloom's developed a classification framework for writing educational objectives which is certainly applicable for architecture education. In this classification by Bloom developed by Anita Harrow (1972), cognitive domain is divided to:

1. Knowledge: recognise or recall information.
2. Comprehension: demonstrate that the student has sufficient understanding to organise and arrange material mentally.
3. Application: a question that asks a student to apply previously learned information to reach an answer.
4. Analysis: higher order questions that require students to think critically and in depth.
5. Synthesis: higher order question that asks the student to perform original and creative thinking.
6. Evaluation: a higher level question that does not have a single correct answer. It requires the student to judge the merit of an idea, a solution to a problem, or an aesthetic work. The student may also be asked to offer an opinion on an issue.

In view of bloom's taxonomy and the nature of 'design' which is a process that involves phases of analytical understanding, critical thinking, and creative decision making (Salama, 2005), architecture students should be able to apply what they learn in studio for the distinct phases of analysis (analytical understanding) and synthesis (creative decision making) of their design work. In addition, the most widespread theory of learning is called experimental learning, which is associated with David Kolb

(1984), who developed ideas from earlier models of experimental learning. In Kolb cycle (Figure 1), firstly, learners are involved fully and freely in new experiences (CE). Secondly, they must have enough time to be able to reflect on experience from different perspective (RO). Thirdly, learners need to form, re-form and process their ideas and integrate their new idea and understanding into sound, logical theories (AC). These middle two parts in the cycle can be strongly influenced by the feedback from others. Finally, moving forward, the fourth point (AE) is using the enhanced understanding to make decision and solve problem, and test implication and usage in new situation. It is suggested that learning process can be started from each points of Kolb cycle and it depends on the tutors and learners. This cycle should be repeated constantly to improve the learning outcome.

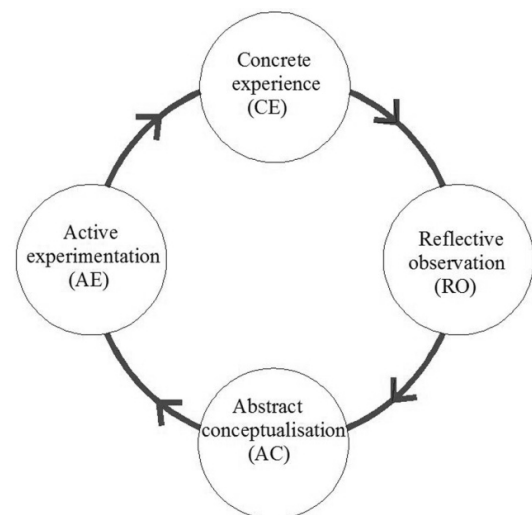


Fig. 1 The Kolb Learning Cycle (Fry, 2009)

Like many schools of architecture, Coventry University states that learning from all the subjects outside the studio should be demonstrated in the studio, and that the studio is the meeting point for all other input. However, whilst there should be integration among lecture-based modules and design studio projects to enhance understanding and design quality, students themselves often face difficulties in effectively integrating and applying the knowledge gained into their design.

The literature review demonstrates that the relationship between Cultural Context and design studio has never been thoroughly studied

before. It can also be argued that architectural design and Cultural Context are treated as two distinct disciplines with an unresolved and largely indistinct relationship. Whilst the learning from lecturers in Technology can be obviously reflected in studio projects, that from Cultural Context lecturers is not so easy to identify and is often relegated to a search for precedents, prompting authors such as Deborah Howard to write, '...the direct relevance of the taught history courses to design work is not always easily identified' (Howard, 2002, p 349). Some authors acknowledge difficulties in the relationship between history and studio and describe projects carried out to address the perceived problem.

Wilson and Stewart (2007) argue that history and theory is either not impacting on the studio project or its impact is not recognised; its role would be strengthened if it was seen to have an impact. However, Flora Samuel (2001) of the Welsh School of Architecture appeared to study the relationship between history and studio. Her paper describes a first year student assignment as a vehicle for this assessment. The assignment was specifically a studio assignment, based round the reading of a text. Samuel concludes, 'the history lecture or seminar provides an excellent forum for the discussion and development of habits of criticism and enquiry' (Samuel, 2001, p 7).

When looking at Construction Technology and Environment, we are continually faced with the same question: why are architecture students having difficulty in integrating technology into their design. According to a research collaboration carried out by the Universities of Buffalo, Utah, Florida, Oregon, and Virginia, the answer is because of three basic problems namely; the structure of the curriculum, the teaching methods and the instructional tools, which are often borrowed from engineering courses and do not satisfy the architecture students' need (Vassigh, 2005). It was further concluded that the teaching of a structure course within architecture programmes faces a major problem in the delivery systems (teaching methods) because the architecture students struggle with a traditional engineering-based approach to structures instruction, which is increasingly unsuitable (Hyett, 2000). However, the integration of structure (and construction technology) should be considered in the initial

stage of design synthesis due to the influence it will have upon the design.

### **Methodology**

This study focuses on the course objectives and method of teaching Cultural Context, and Construction Technology & Environment and in particular to their integration into design studio from Year 1 to Year 3. Semi-structured interviews were carried out to gather view of 15 architecture students across a range of abilities in each of these year groups studying architecture at Coventry University. The Interviews asked questions regarding the application of Cultural Context and Construction Technology and Environment modules in design studio. As a developing course in only its 4th year, the BSc (Hons) in Architecture, it is well placed to consider how current practice can be investigated to improve student engagement and learning outcomes in this area and ultimately give depth and credibility to our students' work. Overall, 50 questionnaires were collected from students in the three years to be analysed. The questions were principally based on rating scale (from 1 to 5) but in addition, there were three open questions asking the students' views on how we might improve the link between the design studio and two lecture-based (taught) modules.

### **Results and Discussion**

Students' perception about the tutors' level of delivery and tutors' level of expectation for the integration of taught modules in design studio were questioned. The results show a significant difference among the students' responses across the department about the level of delivery of Cultural Context (ANOVA T test,  $n=44$ ,  $p<0.05$ ). About 90% of the Year 1 and Year 3 students think what is delivered to them is at the right level and easy to understand; however only less than half of year 2 students (40%) have similar opinion. It needs to be mentioned that around half of the students do not have any clear idea whether the level of expectation is high or low. About 38% believe it is high and only 15% think the level is low. This could be related to the nature of Culture and Context module, as it is not directly ask students to reflect anything in their design module. In addition, there is not a significant difference among the students'

responses across the department about the level of delivery and expectation (ANOVA T test,  $n=44$ ,  $n=43$ ,  $P>0.05$ ) for the Construction Technology and Environment module. Around 74% of students believe that materials are at the right level and easy to understand while around half of the students think that tutors' expectation is higher than what it is taught.

It can be concluded that the students cannot move through taxonomy levels to reach to 'application' level. This issue may be changed by involvement of tutors who teach for the taught modules in the design studio. The students' perception were also questioned regarding the involvement of taught tutors in design module. It needs to be mentioned that in year 1, students have the benefit of having their Construction Technology and Environment tutors in design studio. In year 2, students do not have this benefit. In year 3, students do not have any Construction Technology and Environment module while they have the advantage of the tutors who teach Construction Technology and Environment in other years in design studio.

Based on the result, there is not a significant difference among the students responses across the department about the involvement of Construction Technology and Environment tutors in design module (ANOVA T test,  $n=44$ ,  $P>0.05$ ). The result shows that 93% of year 2, 73% of year 3 and 60% of year 1 believe the involvement of Construction Technology and Environment tutors would have benefit for design studio. In addition, some students suggested more interactive sessions for group tutorials or asking questions as well as visiting real projects. Regarding the involvement of Cultural Context tutors, in year 1, students do not have the benefit of having these tutors in design studio while in year 2 and year 3 they have this opportunity. The result shows that on average, more than half of the year 1 (55%) agree with the involvement of the Cultural Context tutors while in year 2, 53% and in year 3, 40% disagree. It can be concluded that the benefit of such an involvement is not notably clear. However, among the comments, students express their interest in learning new theories in architecture and having lectures about how architects develop their ideas.

In addition, there is not a significant difference among the students' responses across the department about having the design project in relation to Construction Technology and Environment, and Cultural Context modules (ANOVA T test,  $n=44$ ,  $P>0.05$ ). Interestingly, 63% of students believe having design exercises related to their design project within Construction Technology and Environment, and Cultural Context modules would be beneficial for their design project. It can be argued that having small design projects within the taught modules with the focus of what is learned in these taught modules would develop this integration. Therefore, the following Kolb learning cycle is suggested to integrate taught modules with the design module. The outer circle shows the process of learning (according to the Kolb learning cycle) in the design studio. The inner circle shows the taught modules. As illustrated in Figure 2, it is suggested that at different points, the taught and design modules should be integrated effectively.

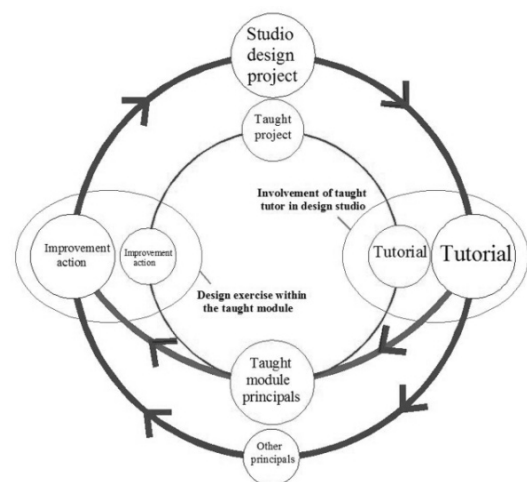


Fig. 2 Suggested Kolb Cycle for Architecture Course  
When students have tutorial, tutors should have a tutorial with cross-referencing the information that have been delivered in the taught modules. Therefore, it would be beneficial for students that the taught module tutors can be involved in the design studio. Students also have highlighted this issue. They think tutors of taught modules should be familiar with the design brief, and teach them relevant materials useful for their design projects.

In addition, when students reform (improve) their design projects, it would be beneficial for them to do some small design exercises as part of their

taught modules. The outcome could help them to apply the relevant information in their design and move from 'comprehension' and 'knowledge' level to 'application' level of the bloom taxonomy to be able to complete the analysis, synthesis and evaluation phases of their design as part of this cyclic process.

### Conclusions

The design studio is the core of the architectural education in most if not all UK schools of architecture. Therefore, it is perhaps obvious that the studio assignments should form the basis for the majority of the teaching and learning. These projects should be taken and cross-referenced throughout the other modules to enhance their relevance, understanding of application and the students' understanding of the benefits of a holistic design approach.

The tutorial is a key teaching approach in the design studio which has a strong and valid tradition in architectural education; therefore, asking lectures who teach outside the studio to actively participate in teaching and development of the studio projects is recommended. Consideration should be given to firmly linking the theoretical, technological and cultural context of teaching and learning with design studio projects. Finally, projects and assignments should be chosen which allow students to explore different contexts, cultural perspectives and experiences, including their work and workshops, seminars and open discussions which can form part of the taught subject curriculum to discuss ideas coming out of studio.

### Notes

<sup>1</sup> Fry, H., Ketteridge, S. and Marshall, S. *Teaching and Learning in Higher Education*. 3rd ed. Taylor and Francis group: London. 2009.

<sup>2</sup> Gross, M. D. and Do, E. Y-L. "The Design Studio Approach: Learning Architectural Design". College of Computing, Georgia Institute of Technology. September 8-9, 1997, Atlanta. Available at: [http://depts.washington.edu/dmgftp/publications/pdfs/e\\_dutech97-eyd.pdf](http://depts.washington.edu/dmgftp/publications/pdfs/e_dutech97-eyd.pdf), accessed 10 February 2013.

<sup>3</sup> Harrow A. "Taxonomy of Education Objectives". 1972. available at: <http://www.humboldt.edu/~tha1/bloomtax.html>, accessed 25 February 2013.

<sup>4</sup> Howard, D. Teaching Architectural History in Great Britain and Australia: Local. Conditions and Global Perspectives. *Journal of the Society of Architectural Historians*, 61 (2002). p 346-354.

<sup>5</sup> Hyett, P. Architectural Students Must be Properly Equipped to Practice. *The Architectural Journal*, 212 (2000).

<sup>6</sup> Salama, A. "A Process Oriented Design Pedagogy: KFUPM Sophomore Studio". College of Environmental Design King Fahd University of Petroleum and Minerals- KFUPM - Dhahran, Saudi Arabia. *CEBE Transactions*, 2 (2005). p 16-31.

<sup>7</sup> Salama, A. "Design Studio Teaching Practices: Between traditional, revolutionary, and virtual models". College of Environmental Design King Fahd University of Petroleum and Minerals- KFUPM - Dhahran, Saudi Arabia. 2006.

<sup>8</sup> Samuel, F. "Lower Case History and the Development of Reflective Practice in Studio". Paper presented at AEE2001 (Architectural Education Exchange Conference) 11th-12th September 2001, Cardiff University. Available at: <http://cebe.cf.ac.uk/ae/sessions/dis2b.html>, accessed 20 February 2013.

<sup>9</sup> Vassigh, S. "Structure Learning Center Home". 2005. Available at: [www.learningstructures.org/home.asp](http://www.learningstructures.org/home.asp). accessed 20 May 2009.

<sup>10</sup> Wilson, L. and Stewart, M. "Cultural Context and the Studio: the relationship between history teaching and studio learning". *Edinburgh College of Art. CEBE Transactions*,