

# ARCHITECTURAL EDUCATION -STUDIO BASED LEARNING

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## ABSTRACT

In *A handbook for Teaching & Learning in Higher Education*, Philip Martin proposes two key principles: 1.The learner as active subject and 2. Arts, humanities and social sciences are disciplinary fields, which are heavily value-laden. He stresses the point that:

*“Academic subject areas in the area are cored through and through with ethical issues, social concerns, judgment, and the recognition of human agency”.*

Further *“In these classrooms the validity of personal opinion, subjectivity, individual experience and creative skepticism mix with judgments about right and wrong, truth and untruth, order and chaos. Our task as teachers is to ensure that such judgments as emerge are best provided for by being well informed, and that this threshold of information is also served by a schooling in argument, the careful presentation and interpretation of evidence, and the identification of the valuable questions that need to be asked”* [1]

We set out to develop technically proficient, aesthetically sensitive, socially responsible design professionals equipped to create architecture and environments for a changing, global society. We come from a position that includes cognitive and constructivist principles.

There is a need for a rigorous teaching methodology, in order to educate the learner designer in the myriad of skills required and develop the appropriate mental attributes to encourage creative thinking.

We use a form of Problem Based Learning that has been referred to as guided design.

## INTRODUCTION

Design problems are posed that have been prearranged for management and feedback purposes. The Learner works as an individual and as part of a small group who cooperate to work through a structured problem solving strategy to develop a solution to the design problem set. The tutors give feedback at the end of each activity. The learner responds to this feedback and resubmits before moving onto the next stage. Feedback has indicated that learners are much happier with this process and the results demonstrate that they are engaging with their learning at a much deeper level.

Currently we offer a five-year program of study. Our focus is on learner centered education and delivery across a broad spectrum of teaching and learning styles. [2] Studio is a core element of our program. It is imperative to organise the solving of

design problems in studio in a way that provides opportunities for reflection and constructive feedback. This feedback must come from the tutors and the learner designer's peers. Summative assessment does not occur until learners have reflected on and responded to feedback. We have moved from the more traditional approach as follows:

- Summative assessment occurred without an opportunity for the learner to reflect and upgrade.
- Reliance almost entirely on individual critiques
- There was very little structured group work and the focus in feedback tended to be negative rather than positive.
- The project brief did not include all of the learning objectives and assessment criteria was not explicit.

To:

- A system that is more reflective.
- Assessment is mainly of a formative nature until the latter stages of a project.
- We teach across a broad range of areas including creative problem solving, concept development, and technological issues.
- Project briefs are written in response to a set of agreed learning objectives that are clearly aligned to assessment criteria.

Group work and group critique are used by us to develop the student designer's architectural skills base and to encourage our student designer's to learn including:

- The development of the skill of Reflection in and on action.
- The use of visual, and verbal modes of expression in the delivery of course material and the ability to listen actively. This is an interactive process between the learner and tutor/s.
- Facilitating the understanding of why research is necessary, how it happens, including categorization, analysis and processing of information. The student designer learns to recognize the need to come to sound conclusions based on substantiating evidence as the basis for making good design strategy decisions.

The student designer's education includes learning the language of design and developing the ability to communicate in this language with themselves in dialogue during the design process and as a means of communicating their ideas and solutions to design problems to others, developing the student designer's interpersonal, intra-personal skills and management skills.

We are attempting to ensure their developing professional knowledge is matched to "*the changing character of the situations of practice - the complexity, uncertainty, instability, uniqueness, and value conflicts which are increasingly perceived as central to the world of professional practice*". [3]

## DEVELOPMENT

Social and technological change is happening exponentially. This requires the professional to be more equipped to deal with situations of uncertainty. Schön recommends that what is called for are analytic techniques traditionally used in operations research, along with developing the active, synthetic skill of 'designing' a desirable future and inventing ways of bringing it about. [3]

We set open-ended problems. Learners developing schemes from their own concepts can achieve myriad solutions to the same problem. The use of group-work allows them to gain a broader perspective on problem solving. During the course of the project learners are required to carry out research, not only do they collect the information they

are expected to analyze it, synthesize it and evaluate it. This teaches the learner to look at the world around them in a more critical and analytical way. This broadening of the learner's education allows them to be adaptable to the changing circumstances of professional life. This corresponds with Schön's view that:

*"The dilemma of rigor or relevance may be dissolved if we can develop an epistemology of practice which places technical problem solving within a broader context of reflective inquiry, shows how reflection-in-action may be rigorous in its own right, and links the art of practice in uncertainty and uniqueness to the scientist's art of research".*  
[3]

We facilitate learners to develop their ability to operate across the domains of Bloom's taxonomy and they should be operating at the highest levels by the time they are in their final year. [2] For example:

Cognitive domain:

- Demonstrate the ability to analyze, synthesize and evaluate

Affective domain:

- Demonstrate the ability to solve problems
- Be able to express a set of specified values such as developing and defending an argument,
- Work as part of a team,
- Recognize the need for balance between freedom and responsible behavior.
- Show self-reliance when working independently.

Psychomotor domain:

- Demonstrate the ability to perform automatically with precision and create physical conceptual modeling in psychomotor domain.

When evaluating our course program we realized that some learners were not operating at the highest levels across the cognitive, affective or psychomotor domains. They were not solving the problem creatively in three dimensions. Their performance in studio demonstrated that their skills in architectural representation were not automatic. This resulted in a poor ability to communicate their design ideas or process to themselves or others. We were of the view that if this issue were addressed appropriately it would leave learners free to develop their abilities in the other two domains.

We addressed this issue in a number of ways:

- Providing additional input in the form of tutorials in an effort to upgrade their skills.
- Moving to the use of the three-dimensional model as a means to solve the design problem initially.
- Reviewing the learning outcomes for each year of the two programs in an effort to ensure the learner had the appropriate skill levels to progress.

We have moved to a situation where studio revolves around the use of group-work and discussion. Critique involves small groups of learners with similar issues. Our feedback is mainly of a formative nature until a major section of the project is completed. Learners pin at set stages and they are allowed to reflect on feedback and respond by resubmitting their work before moving onto the next stage. Project involves the use of inductive and deductive organizational methods. [2]

We address the individual needs of the learner to progress sequentially or globally in studio by ensuring that learners oscillate between local and global issues, focusing on details for example whilst keeping their eye on the big picture or concept driving the solving of the design problem.

Our methodology includes providing opportunities:

- For interactive engagement.
- An environment that encourages learners to be self-motivated.
- To learn by doing as well as having time to respond to formative feedback as a means to take in, reflect on, make sense of and use design knowledge across a range of subject matter in a number of different situations.

These are critical factors underpinning successful learning in any context.

The organization and management of studio involves breaking the project down into stages. We use these stages as a reflective teaching tool and as a guide to the learner including:

- Research areas such as, structure, materials, forms of construction and detailing.
- Programmatic requirements, including matrix, and relationship diagrams.
- Precedents. In this area learners evaluate how other designers have solved similar problems including how they have used the design elements to realize their concept.
- Concept development. The early stages of development of their scheme takes place using working models in order to develop three-dimensional skills.
- The first time learners produce schematic drawings is when the major decisions have been taken in the model.
- Once all the issues have been resolved using the model and the sketch design drawings, learners look at the detailing of their interior spaces.
- Detailed design schemes follow on from this process.
- Learners are required to demonstrate they have identified the key pieces of relevant criteria, come to conclusions and made appropriate strategic design decisions at the end of each stage, all in an effort to inform their developing design.
- Learners are required to carry out a presentation task that addresses which media and mediums are most suitable modes of communication with respect to their concept.
- We carry through the same system of critique, reflection, evaluation, and resubmission during all these stages.

Re-organizing studio and moving to more learner centered approaches helped to ensure that:

- The learners are engaged as active participants.
- Group-work fosters teamwork and team members use fellow learners as a resource.
- The learner feels less threatened because we used criterion-referenced assessment.
- The student realises their contribution to group-work is as important as their individual submissions.
- The process demonstrates to them that the success of the group develops the individual significantly.

This allowed us to think carefully about what we wanted the learner to achieve in the learning outcomes, align these more appropriately with assessment criteria and helped us to make outcomes and assessment criteria more explicit. Research indicates the importance of aligning teaching to a set of clear learning objectives, which specify the desired level of understanding required. [4]

Discussing the issues with groups, learners are allowed to express their views without fear of censure. This facilitates a critical evaluative process to happen.

Learners are required to take responsibility for the management of their time and resources in an effort to develop the above skills to the appropriate level.

We believe that being able to communicate and deliver presentations is at the heart of using the design process. Helping learners develop these skills must be a core element of all design educational programs. Communicating and delivering presentations are key transferable skills used in most walks of life and in many kinds of situations. These are essential generic skills for graduates in any field. [4]

We facilitate learner education and development in using a range of tools, techniques and communication approaches, so that our learners structure their communications and presentations to reach intended audience appropriately. Some of the modes of expression explored are, the visual, the written word and verbal dialogues including, drawings, annotated diagrams, models, conceptual sketches, scaled plans, sections and elevations as well as three-dimensional drawing such as perspective drawings. Studio is supplemented by information technology such as CAD and Photoshop.

Learners are required to keep a design notebook to assist their reflective dialogue. This informs the process of communicating and presenting findings, conclusions and decisions in formal and informal communications, and presentations to peers and tutors.

## SUMMARY

Architectural programs should be coordinated by architects who have a broad professional experience and expertise in the field with a strong interest in the educational aspects of architecture.

Staff development programs should include opportunities for program team members to address teaching and learning issues including theory and practice, develop skills in reflective practice and problem based learning.

Course leaders and program team members need to identify the gaps in breadth and depth of knowledge and experience of the group. This can be addressed by providing additional educational and experience opportunities and ensuring guest lecturers complement their knowledge base.

A systematic approach should underpin the whole learning process.

## REFERENCES

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