Research Article

BRIDGING GAP BETWEEN THEORY AND PRACTICE IN ARCHITECTURAL EDUCATION WITH LEARNING BY DOING (EXPERIENTIAL LEARNING)

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A R T I C L E   I N F O

A B S T R A C T

Architectural Education plays a very important role in shaping the profession. But in today's world there is wide gap between what we learn and what we build because of this we are in serious problem. The teaching strategies for architecture currently prevailing is 'Form, Function, Space' based 'Design Centric' one that creates 'elevations; '3D views' and 'walkthroughs', amply supported by the 'cut and paste' options of the digital world. Currently, the systems and subjects prescribed are unfortunately being taught very superficially and in isolation. 'Skills of hand' has almost become obsolete, when we know for sure that the best buildings on the earth were all 'hand-made'[1]. For these reasons, we find ourselves today searching for ways to repair the damage with the help of Bauhaus concept i.e learning by doing or experiential learning, in which passive learning – sitting at the desk listening to teacher is replaced by activity or project based learning involving the full participation of the student, was inspired by progressive education theory at primary level, and has since passed into all levels of education.[2]

INTRODUCTION

Good architecture is not merely a piece of architecture but also representative of society, its culture and values and its impact on environment. Architecture Profession has changed over the last decade. New technology, new materials and new skill sets have emerged and posed the new challenges for architecture education in India. Architectural Education plays a very important role in shaping the profession. But in today's world there is wide gap between what we learn and what we build because of this we are in serious problem. The teaching strategies for architecture currently prevailing is 'Form, Function, Space' based 'Design Centric' one that creates 'elevations, 3D views' and 'walkthroughs', amply supported by the 'cut and paste' options of the digital world. Currently, the systems and subjects prescribed are unfortunately being taught very superficially and in isolation. When we go to field after graduation we are not able to build our imagination on earth. For above concern we need to be more practical approach i.e Hands On or learning by doing or experiential learning approach. Everyone knows that knowledge is not being imparted in an integrated manner with skills of hands, sensual perceptions, intelligent conceptions, digital precisions and powerful visualizations possible. *'Skills of hand'*

1. Dr. Harimohan Pillai
2. Martin Pearce and Maggie Toy, "Educating Architects", Globalism and the Regional Response, Chris Abel.

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Earth were all 'hand-made'. For these reasons, we find ourselves today searching for ways to repair the damage with the help of Bauhaus concept i.e learning by doing, in which passive learning- sitting at the desk listening to teacher is replaced by activity or project based learning involving the full participation of the student, was inspired by progressive education theory at primary level, and has since passed into all levels of education.

"Tell me and I forget, teach me and I may remember, involve me and I learn." Education plays a fundamental role in preparing students to reframe their role in the professional environment. It is required to establish better connections with the given professional realm. Not until recently, the on-going developments in the field didn't seem to influence educational approaches. The state of individual status of learning is underlined in the relationship between information, knowledge and understanding.

Understanding, in many cases in education suffers from the long lasting gap between theoretical knowledge provided by teacher to students and the practical capabilities students require to develop in their future professional practice. Increasingly students and faculty alike are calling for a "hands-on" approach to architecture and building construction as an integral part of the architectural education. Learning by doing is considered a good way to enhance problem-solving skills, dealing with client groups, working with different materials,

construction techniques and methods, and preparing students for future practice. Our studio is regarded as being where students demonstrate their creative abilities, viewed as designing buildings, often without any real sites or context to deal with - in effect, poor imitations of the real world. The notion of 'practical' gets lost within the context of architectural education as the nurturing of individuals who are 'Master Builders' or 'Experts', but not versed in the actual production of architecture, and how to respond directly the needs of clients.

The lack of engagement with practical courses makes teaching of architecture somewhat difficult, with students generally unable to seek innovative solutions as a consequence. Thus, there is a need to engage students beyond mere book knowledge as part of their architectural education.

Background

The status of design education generally and the design studio especially, appears to have reached a critical stage at the present time. 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'.[3]

Experiential Learning

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.[4]

In experiential learning or learning by doing the learner is directly in touch with the realities being studied. It encompasses several methods of learning covering are, as such as laboratory science, applied studies, clinical experience, studio arts, and field studies. Either on or off-campus, experiential learning is the apparatus in which the learner is subjected to situations where he/she develops and assesses his/her critical thinking abilities, thus allowing for freedom of creative thought and preparing for a lifetime learning process.[5]
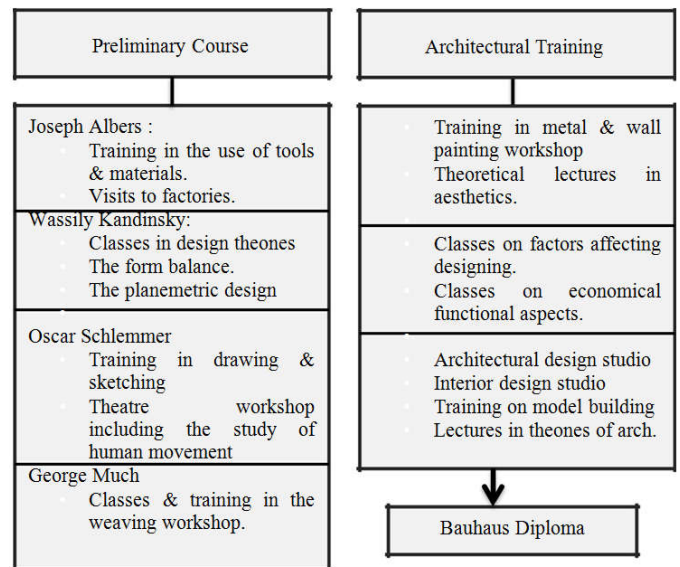
Bauhaus

In the 20th century, origins of learning by doing in architecture education lie in the 1920s with the Bauhaus. Under Walter Gropius, they "re-established the critical relationship between the designer and the medium: the materials of construction, the processes of forming and fabrication, and the constraints these place on the design. In a sense, the Bauhaus was the first learning by doing program of the twentieth century".[6]

The Bauhaus Education System
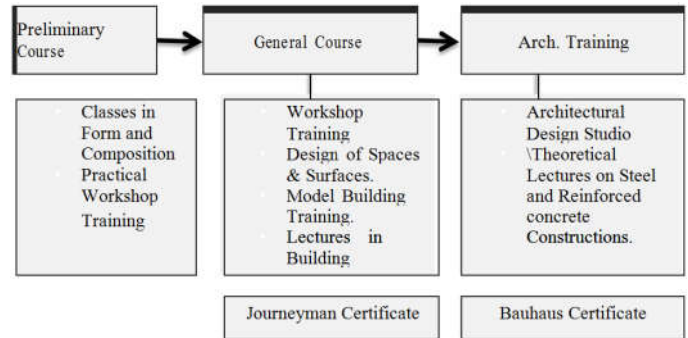
The educational process of Bauhaus during its early period[7]

The Bauhaus school was in many ways an extension of the apprentice system in which students gained mastery of certain technical skills in several disciplines, obtained aesthetic training in applying these skills in the age of modernity, and required to pass journeyman tests to obtain cards for various disciplines in order to have an employable skill when graduating.

The Educational process of Bauhaus after the development of the workshops and the curricula.[8]

Learning by doing offers many benefits to both student and tutor. Because designing is a practical process it is a form of learning-by-doing or active learning. During projects the tutor assumes the role of facilitator and the student, who is at the heart of the learning process, proactively takes ownership of

1. Ghaziani, R., Montazami, A. and Bufton F. *Architectural Design Pedagogy: Improving Student learning Outcomes. AAE Conference*(2013) .Coventry University
2. Ghaziani, R., Montazami, A. and Bufton F. Architectural Design Pedagogy: Improving Student learning Outcomes. *AAE Conference*(2013) .Coventry University

5. Eldeen, H. Experiential learning in undergraduate education : Cases from Egyptian Universities.
6. Canizaro, V. Design-Build in architectural education: Motivations, Practices, Challenges, Successes and Failures, *International Journal of Architectural Research,*(Nov-2012).

7   Salama, A.(1995),*New Trends in Architectural Education : Designing the Design Studio* .United States of America: Tailored Text & Unlimited Potential Publishing.

their progress and can self-direct their acquisition of new knowledge and skills through the exploration of an idea. In this respect Learning by doing supports constructivist learning theories where the artificer forms an understanding of a subject or theme by critically reflecting on their first-hand experiences of it. Tyler believed that 'learning takes place through the active behavior of the student: it is what he does that he learns, not what the teacher does.' In architectural education, learning-by-doing is combined with knowledge application to further intensify the learning experience. This encourages in-depth learning and a practical understanding of a subject as a result of idea exploration and reflection. The designer self-selects, retrieves and researches relevant information, theories and techniques to respond to a design challenge. Mirroring professional practice, the designer demonstrates and performs their understanding of this existing or new knowledge by creatively experimenting and applying it during the design development phases. This transforms declarative knowledge into „functioning" knowledge and requires the ability to combine knowledge with analytical and practical skills. Often in architectural design, data can be taken from a diverse range of sources and the ability to critically analyse, reflect, select and intellectually and creatively apply what is relevant to a project to add coherence to what might be a complicated scenario, creates multiple unique combinations and responses to the same design brief. The advantage of this is highlighted by Kowoltoski who states that 'given a specific design reference, a student may learn to identify relevant concepts and build a theoretical basis for his/her design knowledge, which can then generate new design solutions'.[9]

Instructional intentionalities of learning by doing

By "intentionalities", means the primary pedagogical motivations for the institution of the program. Such "intentionalities" can influence the internal processes carried out by the students and faculty, the kinds and sites of projects selected, and allowed for the work.

For Construction Experience: Design-build as a pedagogical practice is adopted for many reasons and a variety of intentionalities can be found in almost every program. Yet each program has a focus. Construction Workshop, the programs have been motivated by a desire to introduce students to the art of building. In them, hands-on construction is a renewed medium for the architect's creativity. At its most pragmatic, a focus on building is understood as necessary exposure for future professionals. It is an attempt to demystify the construction site and help students realize what is involved in taking architecture from a drawing to a building. And it is "an opportunity for the students to understand the building process with their own physical labor recognizing the value of hands-on learning." Because of this students take interest in 'learning about building' understanding how things go together, making things, or gaining real life (real world) experience in place of just designing"

For Enhanced Awareness of Place: The realness of learning by doing projects has also allowed some programs to adopt them as means to train student to be more responsive to specific site and local conditions.

8   Salama, A.(1995),*New Trends in Architectural Education : Designing the Design Studio* .United States of America: Tailored Text & Unlimited Potential Publishing.

9   Jolley, V. *Constructing knowledge: a pedagogical evaluation of design-based learning.* University of Central Lancashire

Such sensitivity is focused, in these cases, on both climate and local culture. In the case of climate, the necessary performance of the structures for cooling, access to natural light, etc. is not solely diagrammatic, but real. It is out of the same responsibility and presence of a real place, that the students are challenged to respect and consider local architectural character, heritage, and ways of life.

To Enhance Collaborative Skills: Making building is by nature a group project that benefits from collegiality and diversity and that working well together with your team mates is of no less importance as working with your clients and neighbors. Projects are of such a scale that "it exposes students to working in teams and accepting that you may not be great at everything. It allows students to grow in self-confidence in terms of working in teams and accepting they don"t have to be a genius in everything".

To Explore Materials & Materiality: Learning by Doing programs have been used as a vehicle for students to explore the uses, characteristics, and potential within building materials, their assembly and tectonic/ spatial possibilities.[10]

CONCLUSION

Learning by doing is an example of using modes of learning that mirror professional environments, which also have been used by other practical disciplines such as music, nursing, teaching, medicine etc. This approach can provide quality student experience as well as develop many key high-level transferable graduate skills. Students learn how to learn, think critically and how to work autonomously either individually or as a team member, which are essential skills for life-long learning and employment. They also gain the ability to hypothesize, test strategies and evaluate conclusions. In relation to their discipline they acquire a self-directed, in-depth, critical and practical understanding of their subject. This knowledge is dynamic and may evolve through further investigation, having reflected on personal development plans. In relation to architectural education the design process, learning environment and mode of delivery offers many opportunities for reflection and encourages students to identify their own learning needs or desires.

Through the process of the design studio future architects have the opportunity to master the ability to become responsive to complex, ever-changing scenarios and transform them into emergent, unprecedented architecture that sheds light on a more promising and fascinating future. Integrative and investigative learning-by-doing approaches could undertake an experimental paradigm in which students and professors alike collaborate to push the boundaries of the discipline, allowing the pedagogical context to become central in the development of new insights. Pedagogical objectives and learning outcomes should support students" abilities to develop entrepreneurial minds in order to understand how to respond to market and professional opportunities. Educators should also aim at enhancing students" communication and collaborative skills in order to help them perform better in a widening array of consultants and inter-disciplinary teams in their future professional practice.

10   Canizaro, V. *Design-Build in architectural education: Motivations, Practices, Challenges, Successes and Failures, International Journal of Architectural Research*,*(Nov-2012)*.

Through the design studio there is an opportunity to bridge potential gaps between academia and industry early enough, in order to network and channel students into the professional market.

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