DESIGN PEDAGOGY--A TESTED PATH

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Abstract
Knowledge, skill and design are three basic components of architecture education. Knowledge, i.e. theoretical part of the education can be taught by taking assistance from education technology. Skill has to be taught by demonstration. However teaching “design” is still being discussed and debated. The paper is about establishing the fact that process is important in teaching design and in continuous development of tender minds of students. The paper also demonstrates briefly the process adopted and established at our college, with a careful conscience of not leading the stakeholders into the rut, so that it is never forgotten that creativity is the essential component of design. An example of third-year design studio is chosen to demonstrate the progression in learning process of a student and to demonstrate the applicability of local context.

Keywords
Process, progression, knowledge, skill, curriculum.

Introduction: Knowledge
Analysis of knowledge is possible along two dimensions, general knowledge versus local knowledge. This is also called vertical and horizontal knowledge. Architecture education has to be a judicious combination of vertical and horizontal knowledge. The methods of transmission of these two types of knowledge are different. Different models of appropriate teaching can be chosen for this transmission. There are different roles of central as well as local knowledge institutions. General knowledge is knowledge that is true for all countries, cultures, and times; it can also be called as “universal knowledge,” which remains unchanged under all circumstances. Local knowledge takes account of the specifics of the place, people, and time. It is necessary that general knowledge be made locally applicable and that the adaptation is made by the local doers of development. (Not given as a gift or imposed as conditionality from outside.) Considerable efforts are required to adapt general knowledge to local conditions and culture. The role of architecture institutions is to be sensitive and careful towards this issue.
One has to know the surrounding thoroughly, only then it is possible for him to understand the rest of the world. This is an important issue as far as education philosophy is concerned and Mahatma Gandhi propagated the same. He always said that, “Doors and windows of my house are always open for fresh winds from outside but first I should know who I am, otherwise the wind of change would sway my feet away.”

**Skill**

Skill in architecture education can also be categorized into two types. Skills related to reproduction of drawings and building, and professional skills. Skills related to reproduction of drawings and building have “craft” component within them. Since architecture is the combination of art and technology, art in architecture and craft in architecture are closely related. Art has traditionally been taught mostly by demonstration. Teachers of music must actually sing to students and painters have to demonstrate their masterstrokes with a brush in the hand. So should the skills in architecture to be demonstrated to students.

The proportion of professional skills should be less as compared to reproduction skills at lower level. Thus, the early years of architectural education should be comparable to the vocations related to architectural profession. With the increased input of knowledge the vocation gradually gets converted into a profession. Skills of reproduction of buildings should be taught more on site with live examples. Workshops for developing skills need to be attached to the schools at appropriate levels.

**Design**

“Design” in architecture education should extend an opportunity to apply the knowledge and the skills learned. “Seeds of thinking sowed in other subject should flourish and develop in design studio.” “Thinking logically” and “thinking creatively” taught to students in some theory

![Figure 1: Levels of Horizontal and Vertical Knowledge in Architectural Education](Source: Author)
subjects or through some of the visual art skills have to be applied to the design projects taken up in the studio. The teacher in the studio has to be a co-learner, but with a clear vision regarding required output from students at the end of the project and having a know-how about the process that is required to be adopted to achieve the envisioned end product. The teacher also has to have the ability to modify the vertical knowledge to suit the local conditions and requirements. The teacher in the design studio has to ensure that the skills required during the process are known or taught to students.

The “process” is built into the meaning of the word “design” as a verb: to, conceive, to create, to plan, to form etc. are some of the meanings of the word design given in the dictionary. The process is the system of operations in the production of something and the method is a means or manner of procedure, especially a regular and systematic way of accomplishing anything. The final outcome of designing has to be assumed before the means of achieving it can be explored. The designers have to work backward in time from the assumed effect of chain of events leading to starting point. This critical path is design process. The teacher in the design studio has to be aware of various processes available and should be trained to choose an appropriate process for the chosen design project in the studio.

Teaching design occupies more than 40% of the teaching-learning load in architectural institutions all over the world. “Can design be really taught?” If the answer to the question is yes, then should it be really taught or is it only to be learnt? Methods adopted for teaching design have always been discussed and debated.

Every individual is very sensitive about his or her method of teaching design. But teaching the subject with different methods every year as per the individual teacher’s liking would create confusion in the tender minds of students. This major chunk of teaching and learning design needs to be attended more carefully, sensitively, and scientifically. Students are likely to learn without confusion if continuity is maintained in their learning and they are taken gradually from the world known to them to the world that is not so familiar. Loss of continuity would result in undesirable effects.

“Each individual has unique creative talent and thus the teacher is required to only assist them to explore that hidden uniqueness within.” In spite of all these discussions, the need for a process for teaching design is now an established fact. Thus the teachers at S.M. M. College of Architecture, Nagpur, India, have tried to adopt a policy which clearly defines the state of mind of students, inputs required from staff with special emphasis on creative exercises.

“Molding a teaching method for teaching design is a challenge. The problem generally with any method or system is that it stems the very creativity that it was expected to develop. Soon it becomes a rut. We try to get out of it and make more ruts. If the purpose of design education is to liberate the mind from set patterns (clichés) then we need methods that allow adventure and exploration of paths not treaded. The method should eliminate drudgery, repetition, and “donkey work.” These must be stimulating, offbeat, enjoyable, and simple. Above all, it must give the designer an insight into the problem, a sense of adventure and finally, the experience of beauty. It must stimulate the
mind to an extent that the designer is surprised by his own creativity. It was with this end in view that a process was developed by using “lateral thinking.” The experience of over two decades is both interesting and possible for emulation.

**Objectives for Adopting the Process**

As per the process, there is vertical progression in design projects with respect to the architectural challenges and the complexity of activities. So the main objectives are to:

- take every student gradually from known to unknown areas of knowledge
- ensure continuity in learning process of a student
- ensure application of local knowledge at appropriate level
- ensure teaching of appropriate skills.

To achieve these main objectives there are several sub objectives of the school, which are discussed in the review meetings held at the beginning and end of the session.

Though both art and technology have influence on each other, art takes more time to change as compared to technology because the sense of aesthetics is deep rooted in culture and tradition of the people of that region. Changing technology shall be utilized to produce a desired art form. The policy is unchangeable part but the methods adopted to achieve the main goal change with the changing technology. Here every objective for a design project is set keeping in view the main objectives of the process, “progression” and “continuity.”

**Progression**

The sequential progression is clearly seen from first year’s project of “My House” to the final year’s project of urban renewal related to urban and environmental issues. After “My House” in first year, it is “Composite House” in second year and “Multiple Dwelling” in third year. Here year-by-year the complexity of residential activity is increased. With the vertical progression, horizontal progression in design is also equally taken care of. Every year a new dimension is given to “My House,” “Composite House,” and “Multiple Dwelling,” and students handle new architectural challenges successfully. Fourth year the maturity of the student is considerable and therefore intangible aspects of architecture and urban-social issues are introduced to students.

Figure 2: Relation of a Space with the Activity to be Conducted Within. (Source: Author).
Complex issues of housing are introduced in fourth year. The fifth year in this pattern is focused more on giving freedom to the student to apply the knowledge gained in all the previous four years.

The objectives of design studio at first year level are: Introduction of architectural language and making students aware of architecture around them. Analyzing their own house (an architecture well known to them) and proposing the new house for the family is taken up.

The objectives of design studio at second year level are: Increasing the complexity and combining two diverse activities. Modular co-ordination is also introduced at this level. While dealing with a composite house in second year, the student is already aware of designing a house. She has to focus on the issues related to joining the house to the additional activity area.

The objectives of design studio at third year level are: Third year Design revolves around the integration of tangible aspects such as services, structures, climatic responses, and the intangible ones, the philosophy, formal, and informality of function etc. Building level projects are expected to be completely understood by the end of third year.

The objectives of design studio at fourth year level are: 1. Architecture is not always what is physical and visible, but it also has some invisible components, which contribute to the “total experience” for its users. 2. Interaction between spaces and users; architecture and its surroundings are important aspects, which make architecture appropriate for its place, time and people (users).

Detailed Example
Multiple dwelling with courtyard concept of housing—a third year design project (2008)

Stage I: Introduction
General introduction of the present scenario of housing sectors to students. Students were asked to study literature to understand the traditional housing in India with special emphasis on...
courtyard concept in the form of internal court, shared court, and common green.

**Objective** – To bring the student’s attention towards courtyard as a design element

**Stage II: Unit Plans and study models**

**Shadow study:** Once all the unit plans with the study models are ready, the students are given the sun dial to find out the percentage of shading, the percentage of shaded area of courtyard, and surrounding walls to decide the orientation of individual units in terms of L/B ratio, shades and shadows. The information is also used for finalizing fenestration design. This experimental exercise gives the students an insight into the play of volumes so as to create the shadow patterns as desired. Students change the L/B ratio of courtyard to achieve maximum shade; they try different orientations to come up with a desirable one. Tabulation for all unit plans with different L/B ratio is prepared to compare the percentages of shaded parts of building and the analysis was done to come up with orientation wise L/B ratio chart as ready reference for other students.

**Stage III: Heterogeneous and homogeneous combinations in 2-D and 3-D**

Using the staircase as connector, heterogeneous and homogeneous combinations of units are worked out to understand the way of augmentation of density in housing layout and also to explain how to take advantage of mutual shading and upper-level open spaces as terraces. Again, using the sundial students come up with the logical placement of upper level so as to create shaded terraces.

**Objective** – To explain them the term density and its importance in housing layout and also to explain how to plan the activity areas by taking the advantage of mutual shading and the concept of upper level open spaces as terraces.
**Stage IV: Cluster design**

From this stage, emphasis is now changed from built design to unbuilt design. To make a cluster, the importance is given to the position of courtyard. The rear-to-rear and front-to-front combinations of courtyards are adopted so as to create the private and semiprivate open spaces. The entire cluster is then checked on the sundial to study the shadow pattern and changes are made to get maximum shaded open spaces especially in the critical months of the year. The location of trees is identified to contribute to shading.

Wind study: A wind stimulator is an instrument in our environmental lab used to conduct experiments related to wind. It has a fan with a speedometer at one end and adjustable louvers to change the plane at other. It has some limitation as far as the size of the fan and the speed is concerned, but it gives the students an overview of the use of such instruments in taking the design decisions.

The wind study is performed on the study model of cluster with the help of the sawdust to mark the flow of wind. Direction of local wind flow is taken into consideration. It is very clear from the experiment where to add wind breakers, how to open the enclosed space to avoid the turbulence, while at the same time how to take advantage of turbulence, how to avoid wind shadow areas, and the relationship of height and the spacing of built form.

**Stage V: Super cluster design**

Super cluster is the stage wherein the students performed the experiment by combining the sundial and wind stimulator. While working out the super cluster, the focus is on the design of unbuilt spaces again, so as to get the hierarchy of open spaces. The inputs were given regarding incorporation of pathways, common parking areas, individual parking, and access roads. Street shading and mutual shading was studied with the sundial.

**Stage VI: Layout**

The identified site was facing the highway. Discussions were held regarding the entry to housing layout, hierarchy of roads, provision of road side parking areas, the community facilities like, health centre, shops, primary schools and their locations. The layout is prepared using the super clusters, clusters, and with the provision of all other facilities needed at area level.
Stage VII: Street Elevations
Students worked out street elevations to design skyline.
Objective It is expected that the students work more on the street elevations, individual unit elevations are not asked for. Final drawings of these students are absolutely different from the batch of previous year because of change in the focus area.

Following are some of the thrust areas of some of the past years.

Vertical clustering in fourth year
Keep in mind the progression of understanding of students in designing dwelling units projects like vertical clustering in the urban village, with an objective of creating a high-rise urban housing with
emphasis on optimum use of spaces, changing urban lifestyle, and vertical clustering to create a collective generative form of urban village.

Teamwork is the key for the success of an architectural firm, so it is true for architectural education. Brain-storming sessions at the beginning and end of the session are necessary for retrospection, future planning, and to ensure continuity in the learning process of student.

References


Discussion with Dr. M. A. Chanserkar ex V.C. of Nagpur University.


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