



# APPROACHING WAYS TO ACHIEVE ARCHITECTURE DESIGN OUTPUT; STUDY OF BASIC DESIGN FORMATION EXERCISE

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**Abstract:** Design is the stem of Architecture Course. The exercises under Architectural Design are framed in a way to give result in the form of Architectural solution for physical, social, economic, climatic and environmental etc. issues of the users. Students at Foundation, intermediate and final stages of undergraduate architecture education gradually learn to handle the gravity of the issues in an ascending order. In this paper an author describes an experience of basic design exercise which was conducted at 2nd year i.e. foundation level which was approached by two different methods to achieve the Architecture Design solutions thereby elaborating its outcomes. This exercise helped in giving clarity of understanding for a design problem and its approach to reveal its solutions in the minds of students.

**Key Words** - Architectural Design, Design Process and Methods, Concept making, Cutting of Shapes, Design Formation.

## I. INTRODUCTION

Degree in Bachelor of Architecture is recognized as one of the most hardworking course in the world. This course is structured to give solutions to the society in a built/ unbuilt form which are being used or experienced by all of us through the life. Many examples of architecture viz. Eiffel Tower, Crystal Palace, Taj Mahal, Burj khalifa, Machu Pichu, Nalanda University etc. are remembered by each one of us. Many of us may have seen, visited, experienced and appreciated these monuments at a point of time for its simplicity, perfection, functionality and beauty. There are few built structures which are being used in a day today life, experienced and then appreciated or just used on and on. This by and large happens in case of residential or institutional buildings. (Lawson, 2006)

The appreciation towards the building architecture is essentially because of the solution we see is an outcome of exercises done by the architect for achieving a particular design and it is a synchronized work of a team under an architect. The architects' team may include artists, designers, technicians, and engineers for some cases planners, managers, economists and environmentalists. (Smith, 2005) (Calatrava, 1996) (Smith C. A., 2004)

## II. UNDERSTANDING ARCHITECTURE DESIGN PROCESS:

Design which is a product or an outcome is to be understood as a process. The working on design solution exercises is also known as 'Design Process'. Design process is followed in Architecture Education to learn on how to achieve the architectural solutions to varied problems of society based on its nature viz. physical, social, economic, climatic, environmental etc. There are different ways of approaching Design when considered as a design process. It is described as the design ideas forwarded to analysis at first stage, then synthesized and lastly evaluated as an outcome. An outcome is further rechecked by reverse engineering technique i.e. going backward upto design idea making. Generalized Map of Design Process may be figured as below:

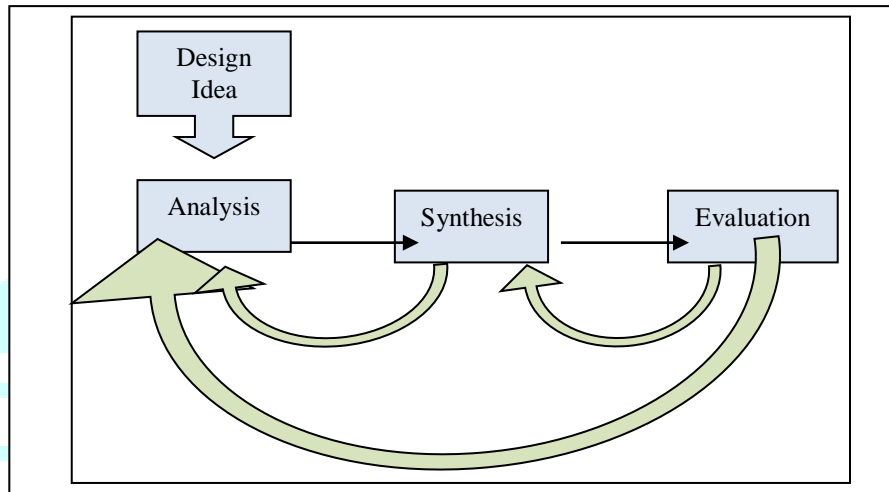


Fig 1 : Generalized map of Design Process, Source: (Ulug, 2010)

As per Ulug researcher there are different methods of Architectural Design Process. They are Sketching, Physical modeling, Computer Aided drawings. (Ulug, 2010) Each one of these methods of Design have its own advantage and restrictions.

A researcher Abdelhamid considers that Design Process has 10 steps. They include: 1. Program Overview, with case studies and design standards. 2. Site Analysis and User/Social Aspects Analysis. 3. Program Development and Areas Checklist. 4. Functional Diagram. 5. Conceptual Statement with a conceptual diagram. 6. Conceptual Model/Sketches with case studies of similar concepts. 7. Zoning Diagram. 8. Zoning Diagram to Scale. 9. Generation of a Line Diagram. 10. Generation of a Plan as a basis for a 3D model. (Abdelhamid, 2020). All 10 steps of Design Process can be arranged in a flow chart as below showing the stepwise process of Design Formation which can be directly used by the students of Architecture in their studio work. (Refer Fig.2.)

Some of the researchers of Design give that it comprises of Design encompass Discussion of Experiences of Well known, Site Visit, Experimental understanding and Design Skills. (Soliman, 2017)

According to Mahmoud Reza Saghafi, Teaching and Learning methods in Architectural Design (Mahmoud Reza Saghafi, 2015) Approaches Develop Self confidence, Spatial Visualization, Expression Skills, Boosting Creativity, Imagination and Site visits.

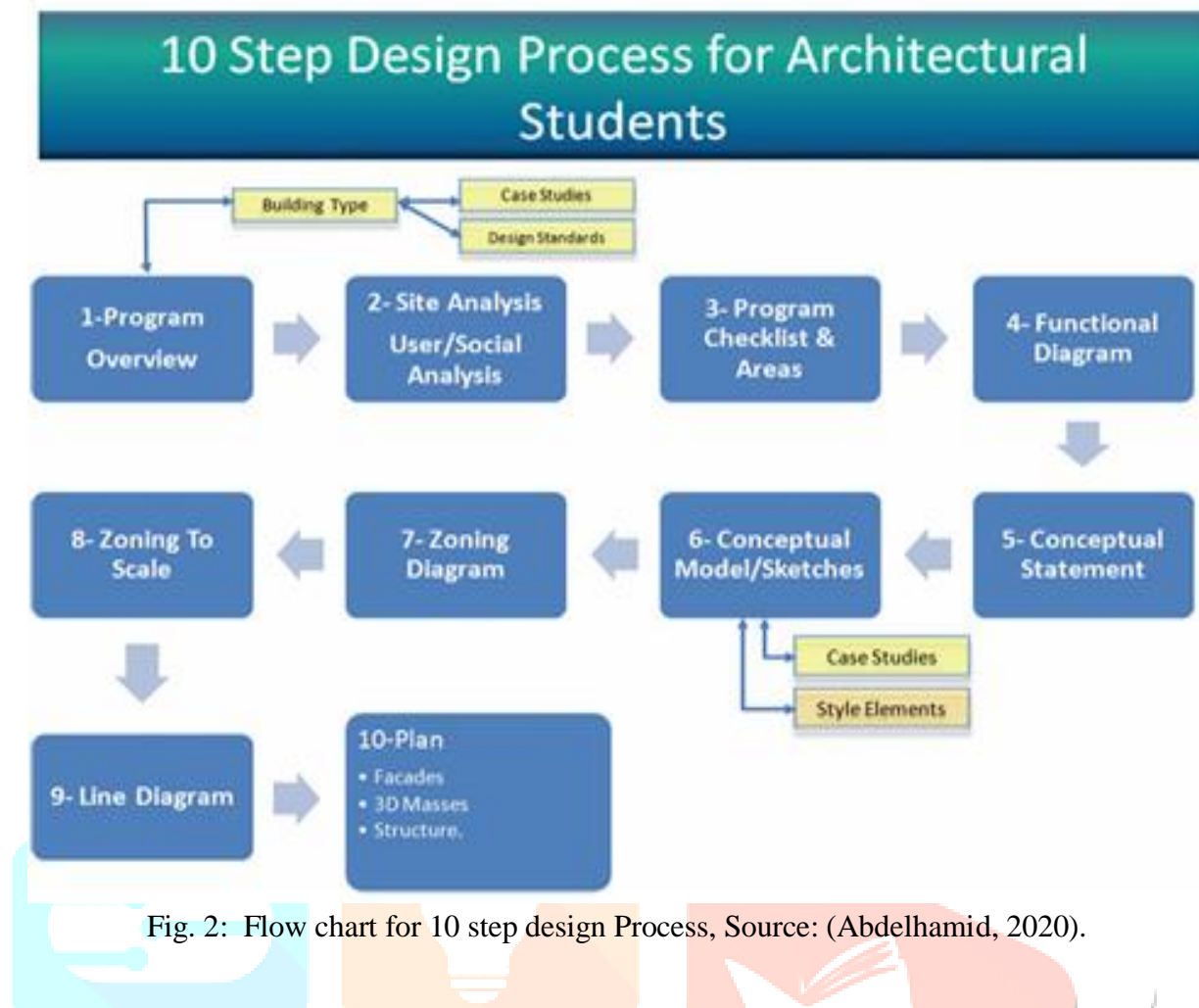


Fig. 2: Flow chart for 10 step design Process, Source: (Abdelhamid, 2020).

‘Maxims of Design’ are the design methods used by senior educationists and which are read out by researchers and educationists in architecture profession. Senior Professor and former President of IIA, Shri. Sheerish A Deshpande has also supported the Maxims of Design. He says we pursue the method of Architecture Design as Perception – Thinking – expression – transmission through verbal, visual and experimental workings at foundation Level. He pronounces Design Process as creative Exercises. According to him creative exercises can be worked in the manners. Viz. cutting and pasting to come up design Form, Paper Models by 2D & 3D with Lift up Method, Composition of Coloured Planes by students, Volumetric Study of Masses with ‘oasis’ Blocks and Emergence of free form in Plastic Clay model making. (Deshpande, 2013)

### III. ARCHITECTURE DESIGN TOPIC SELECTION:

As per the curriculum of Architectural Design there is initial theory and majorly studio type of class work. Being a core subject the design in undergraduate level of Architecture course is handled at 3 stages viz. foundation/ Basic, intermediate and Final stage. The process of Design at these three levels is basically worked on the earlier stage subjects’ implications into it.

We have selected an exercise under Architecture Design at 2nd step of foundation level study for sharing. Experiencing while working on design was started with the deliberations made in the class amongst the students and the faculty. At the end of churning and deliberations by all members, active deliberants participants we could commonly decide to work on A Design of a School. The students were involved in decision making for finalization of the topic in order to teach them how to fix a topic. It was easy for all to imagine and discuss about the design parameters for design of a school as this type of a building was used by

each one of us in the life. Using a School was our first experience of using built spaces outside the own house.

This exercise making was done keeping in mind the learnings by students in the earlier stage i.e. first step of foundation. During first step of foundation students had already worked on single room activity spaces and individual residential design for a single family and details of each type of room in a single family residential building. Therefore selection of a School Design topic was appropriate where there was composition of repetitive forms with a freedom to decide upon the sizes and shapes of activities.

#### **IV. AIM, OBJECTIVES, SCOPE & LIMITATIONS:**

##### ***Aim:***

Aim of this exercise was to remove the fear in the minds of students towards Design making and to create interest amongst students to undergo experiential learning thereby using two different methods.

##### ***Objectives:***

- a. To apply Design Process for One Design Topic using two different Methods and come up with Design solutions.
- b. To compare the outputs by 2 methods for same design Problems.
- c. To analyze the output by comparing it with Design Processes for achieving solutions in the same design topic working.
- d. To mark out learnings by students through the exercise.

##### ***Scope & Limitations:***

The Scope of work at this stage of Design is to undergo two different topics using separate methods and to come up with a solution which will be socially responsive built environment.

The study was limited to exercising on single type of building 'School' and using two methods and giving freedom to students for modifying the requirements as per the method and no other aspects viz. material specific design working, climate responsive design etc. were dealt with.

#### **V. DESIGN METHODS SELECTION:**

To begin with the design problem data collection for finalizing the requirements and circulation diagram making was completed by each student based on their likings, understandings about requirements.

In the mean while two methods for design making were finalized viz. 1. Known to unknown and unknown to known and 2. Composition making by Paper cuts.

##### ***Exercising Methods: Known to Unknown and Unknown to Known:***

While working on this design method the author has selected the concept from the basic ideas brought by the students from various Natural Forms and Finalization of Concepts was done. Next stage of method involved deriving the built form from the concept by relating a conceptual form with school requirements and its Design making. Final stage involved Design formation and finalization of Design details.

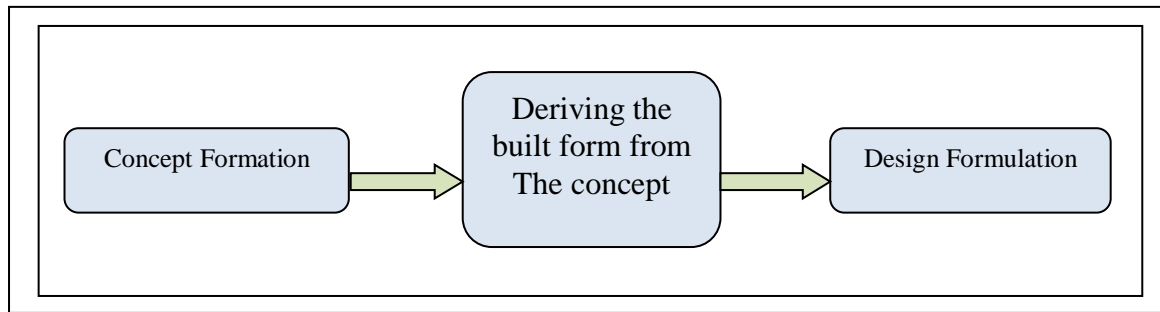


Fig. 3 : Design Method: Known to Unknown and Unknown to Known Source: (courtesy by Author)

### *Composition making by Paper cuts:*

In this design methodology all have selected 2 basic geometrical shapes and cut them to 2 cuts i.e. 4 divisions maximum. The composite shape was formed by an individual by joining 2 pieces of cut mechanism and the composition formation followed by Design making is completed to get the desired design output.

In the mean while data collection for finalizing the requirements and circulation diagram making was completed by each student based on their likings.

## VI. OBSERVATIONS FROM THE EXERCISES:

The significant observations were drawn from the exercises conducted. They are enlisted as below:

1. Students do hesitate in experimenting with non square and rectangular shapes due to fear of handling curves and more than right angle base polygons.
  - a. **Break the Borders:** With the use of this principle and observing their hesitation the curved and higher polygonal shapes were made compulsory.
2. The concept formation is found difficult at times and so avoided by the students. Instead of concept making, simple arrangement of furnitures to derive the shape of the room is welcomed from the students side.
  - a. **Derive Influence from Nature:** With convincing efforts through lectures, presentations and discussions across the table it has brought up varied, innovative and thoughtful concepts to work on design formation by observations from the nature.
3. Once the concept formation stage was forcefully completed they developed interest in processing further with sky as their limit to give their best'.
  - a. **Open up the feathers:** Now they were convinced with enthusiasm for working on different methods of presentation and rendering and have applied various rendering techniques and model makings.
4. The speeding up of interest has helped us work out all the detailing of built arrangements and services.
  - a. **Touching the ground:** Now they were passionate to work on detailing out arrangements of furnitures, building features and building services.
5. As a result of the exercises varied but very interesting Designs have been formulated by individual student.
  - a. **Reaching the Goal:** The Design Portfolio with data collection and requirement finalization, circulation diagram, case studies and analysis, concept formation, formation of composition by cut pieces and Design formulating with Plans, Sections, Elevations, Views of Exterior and Interior details along with basic and final Model making was achieved with satisfaction.



## VII. CONCLUDING REMARKS :

The increasing enthusiasm and interest towards Design making and their joyful facial expressions coming from the heart has given a satisfaction of handling a studio at my end. This realizes that tough things can be learnt by getting involved in it.

Aim of this exercise was here achieved by removing the fear in the minds of students towards Design making and created interest amongst students to undergo experiential learning thereby using two different methods.

## VIII. ACKNOWLEDGMENT

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