SIGNIFICANCE OF ARCHITECTURE GRAPHIC AND DRAWING IN ARCHITECTURE DESIGN STUDIO

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Abstract

The most natural way to document architectural work is through drawing. A single line representing the building has extensive meaning, and it can communicate more effectively and in detail than verbal or written or explanation. It is a piece of Art that allows a work to be moved in time and space. It conveys architectural information across linguistic boundaries.

The line that will carry out the "Drawing" must be drawn clearly, with no room for question as to its length, width, thickness or type. Irrespective of the line is created manually, with the use of sophisticated tools, with the aid of a computer, it makes no difference. The degree of detail distinguishes a technical drawing from a more informal drawing or sketch. A technical drawing provides a detailed information of the entire object, from the layout to line to type to thickness to the building geometry, annotations, dimensions, and graphic symbols.

It is observed that Architectural Drawing which is the language of communication is not followed correctly by architecture students. This in turn communicate wrong interpretation of Design to teachers or person on the other side. This paper aims to identify the course content of Architectural Drawing and Graphics subject which need more focus with respect to teaching and learning of this subject. This will in turn help to get better output in communicating correct design drawings.

Keywords: Drawing, Architectural information, Communicate, Technical Drawing, Correct Design Drawing

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1. Introduction

In addition to the physical and structural features of a structure, architectural design also encompasses the psychological aspects of design. Due to the complexity of these social issues, teaching architecture is a difficult task. Building design is only a small part of the architectural education process. Additionally, architecture courses should include these intangible studies that reflect the complexities of design, along with Design Studio. As a result, architecture courses must be able to produce architects who are innovative, creative, and sensitive to social, environmental, and cultural issues.

Architectural design is a synthesis of art and technology. In architecture school, Design studio is emphasized more than other subjects because it is the most important one. As a result, the knowledge of other technical subjects may not be properly integrated with Design. A difficult task is evaluating these assignments. Architectural Drawing, Building Construction, Building Services and other technical subjects must be integrated into the Design studio in order to achieve a holistic outcome.

Notwithstanding the admirable efforts made in the field of architectural education, it seems that more emphasis has been placed on design education than technological education. The definition of architecture as a creative endeavor in the built environment is "the art and science of creating and constructing communities, open spaces, or buildings in accordance with aesthetic and functional standards" (Harris, 2006). It accomplishes its objectives through two mediums, namely design and technology, which are not mutually incompatible. The greatest architectural creations throughout history, including modern buildings, have been those that have expertly and delicately combined the two threads. In this sense, it is crucial for architectural education to address and adequately prepare students for both design and technological education.

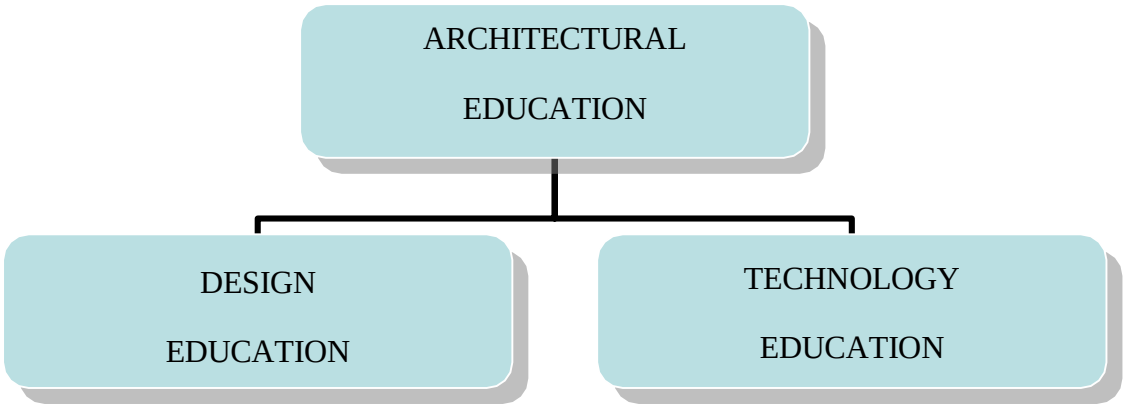

Figure 1.1: Stratification of Architectural Education
Source: Adapted from Connector, (2000)

While the study of the materials and processes used to create such shapes has traditionally been emphasized on technology classes, the study of architectural forms generally takes place in the design studio (Hurtt et al., 1995). As seen in figure 1.1, architectural education may be divided into design education and technological education.

However it is very necessary that the Design ideas and the technological concepts must be represented correctly in the form of Drawings**.**

Background of Study

There are number of papers that have been reviewed and analyzed to identify the research gap in the teaching and learning of Design studio. This is done in order to explore strategies to increase student engagement and to improve the overall output of Design Studio.

Architectural Design, as the core subject of architecture, necessitates a careful teaching and learning approach. Because of the current global scenario and the demand from the building industry, architecture is no longer limited to "Design" by an Architect. Other supporting subjects, aside from Design, reflect the complexities of architecture and are crucial.

As a result, the Architecture curriculum is divided into two core subjects: design subjects and technical subjects (Architecture = Art + Technology). It is critical to integrate other subjects with the Design.

Building Construction & Materials, Architectural Graphics & Drawing, Working Drawing, Quantity Survey, Building Services, and other technical subjects all follow the same language when represented on Drawing. This language remains consistent throughout the world. This is done in an Architectural Drawing using specific norms / guidelines / standard graphics, etc. to communicate the same meaning to an Architect, a consultant, a contractor, a mason, and the client.

It is observed that the subject Architectural Drawing and Graphics which is the language of communication is not followed correctly by architecture students. This in turn communicate wrong message to the teachers and person on the other side.

Thus there is a need to define the new approaches to Architectural Drawing and Graphics which will in turn help to get better output in communicating correct design drawings.

Architectural pedagogy must experiment with different approaches and methodologies in order to improve architectural education. On the other hand, the development of a new approach to teaching the technical subject of architecture must be both desirable and practical at the same time

Significance of Architectural Graphics and Drawing

Architectural drawings are fundamental technical drawings that detail the structure of a building. Symbols, characters, and lines are used to represent the elements graphically. These graphics adhere to a specific measuring scale in order to maintain consistent detail throughout the drawing. Many building features rely heavily on architectural drawings. It is primarily used to communicate the design to the client, for construction purposes, estimation, and so on.

Architects and others use architectural drawings for a variety of purposes, such as transforming a design concept into a convincing proposal, communicating ideas and concepts, persuading clients of a design's merits, enabling a building contractor to construct it, keeping track of completed work, and creating a record of an existing building. Conventions for architectural drawings include specific perspectives (floor plan, section, etc.), sheet sizes, scales, annotations, and cross-referencing. Traditionally, drawings were created using ink on paper or some comparable surface, and any necessary duplicates were meticulously prepared by hand. Drawing on tracing paper became common in the 20th century, which improved the efficiency of making mechanical reproductions. The advent of the computer significantly changed how technical drawings were designed and produced, almost eliminating the need for manual drawing and introducing new forms based on organic curves and intricate mathematics. Currently, the great majority of drawings are produced using CAD software.

The significance of architectural drawings cannot be overstated. It has several advantages that can benefit all of its stakeholders in some way.

- **In-depth knowledge of the space**

The architectural drawings provide a clear and accurate understanding of the space in which the work will be performed. Looking at the drawings, one can thoroughly analyse the requirements and better utilise the space.

- **It aids in persuading your clients.**

Showing the drawings to clients can help them get hired. Clients can get a quick overview of the various elements of the building and provide feedback.

- **Allows you to come up with new ideas.**

You will have a better view of the plan while working with the architectural drafting. Details can be added to the plan. You can contribute more ideas to make it better.

- **Improves the construction process**

Architectural drawings provide an excellent starting point for the entire construction process. It simplifies and smoothens out the procedure. This allows workers to work more efficiently on various aspects of construction.

2. Methodology

The research methodology adopted for this study mainly include review of various Syllabi of concerned Universities with respect to COA guidelines and Surveys of the stakeholders mainly teaching faculties and students.

Following stages of Methodology are being adopted.

1. **Review of Various Syllabi of Universities with respect to COA guidelines.**
2. **Survey for Identification of significant Technical subject for Design Studio.**
3. **Questionnaire for the survey of Teaching faculties and students.**
4. **Outcome of the Survey.**

1. **Review of Various Syllabi of Universities with respect to COA guidelines.**

   Curriculum for Architecture in Savitribai Phule Pune University (SPPU, 2022), Symbiosis Open Skill University Pune (SSPU, 2022), MIT Art Design and Technology University Pune (MIT ADT, 2022) and Bharati Vidyapeeth (BVP, 2022) were studied, and analyzed.

   The Observations are as follows:

   a. SPPU is State Public University whereas all other are State Private Universities.
   b. All University Subjects are as per COA Guidelines. The Core Subjects include Architectural Design, Building Construction & Materials, Architectural Drawings & Graphics, History of Architecture, Building Services, Working Drawing, etc.
   c. Choice Based Credit System (CBCS) for Evaluation for SPPU and BVP whereas Marking System for SSUP and MIT_ATD.
   d. Syllabus Structure is mainly Examination oriented for all Universities. The expected outcome of the subjects is very specific and so as the evaluation.

e. It is observed that No specific Structure for Integration of Subjects has been incorporated in the Curriculum. Integration of Subject is left to Teachers.

2. Survey for Identification of important Technical subject for Design Studio.

The research strategy adopted for this study mainly will include various Surveys (both closed and open-ended questions). Teaching faculty survey was conducted and opinion of faculties who are having more than 5 years of experience in teaching various subjects has been considered. Discussion and Interaction with min 40 randomly selected Teachers teaching who are teaching Technical subject is taken as sample size. Purposive sampling and Random sampling or Hybrid of the two, sampling technique has been implemented. Most of the teaching faculties were of the opinion that Architectural Graphics and Design is the most important subject as far as the correctness of the drawing is considered. It also suggests that the design drawings do not communicate what the student wish to explain and the overall correctness of the drawing is not there.

3. Questionnaire for the survey of Teaching faculties and students.

Staff questionnaire is mainly based on the discussion with the Experts, Curriculum and the Literature review. The objective of this survey to understand the overall feedback of the subject and to identify the units of concern from the syllabus.

The research strategy adopted for this study mainly will include various Surveys (both closed and open-ended questions). Teaching faculty survey was conducted and opinion of faculties who are having more than 5 years of experience in teaching various subjects has been considered. Discussion and Interaction with min 40 randomly selected Teachers teaching who are teaching Architectural Drawing and Graphics subject is taken as sample size. Purposive sampling and Random sampling or Hybrid of the two, sampling technique has been implemented.

Teaching faculties expressed their concerns about four major units.

Students' survey was conducted with the same strategy to understand the level of understanding and level of difficulty of the subject. Discussion and Interaction with min 40 randomly selected Students who are Weak Learners, Slow Learners and Advance Learners in Architectural Drawing and Graphics subject has been done. Students do find difficulty in understanding the subject which hampers the correctness of the drawing.

4. Outcome of the Survey.

The outcome of the survey reveals that there is a need to identify the course content which need more focus with respect to teaching and learning of Architectural Drawing and Graphics subject, which will in turn help to get better output in communicating correct design drawings. The outcome of the survey is analysed on Likert scale (Ankur Joshi et. al., 2015).

As per the outcome of the survey, following criteria are given more considerations as per the preferences mentioned below by the student in the Design studio:

- Planning, Circulation Elevation & Sections.
- Concept of Design & Form.
- Correctness of the Drawing.
- Structural considerations.

3. Result And Discussion

The faculty survey result shows that as per the priority of Technical subject based on the importance in Design studio, Architectural Graphics and Drawing is more important than other technical subjects like Theory of Structures, Building Technology and Materials and Building Services.

All Students may not have the flair for Design but most of them can be technically sound Architects and everyone can make Correct Drawings as drawing is the language of Architects.

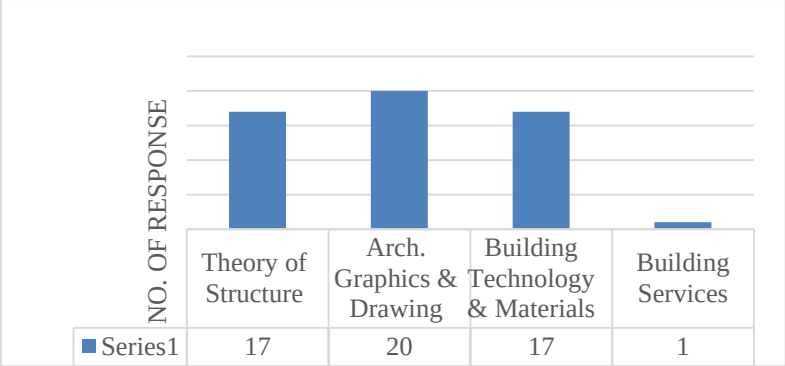

Figure 2: Priority of Technical subjects

The Faculty survey responses indicates that 4 major areas of concern about the structure of the course content where students are facing difficulties in understanding the subject

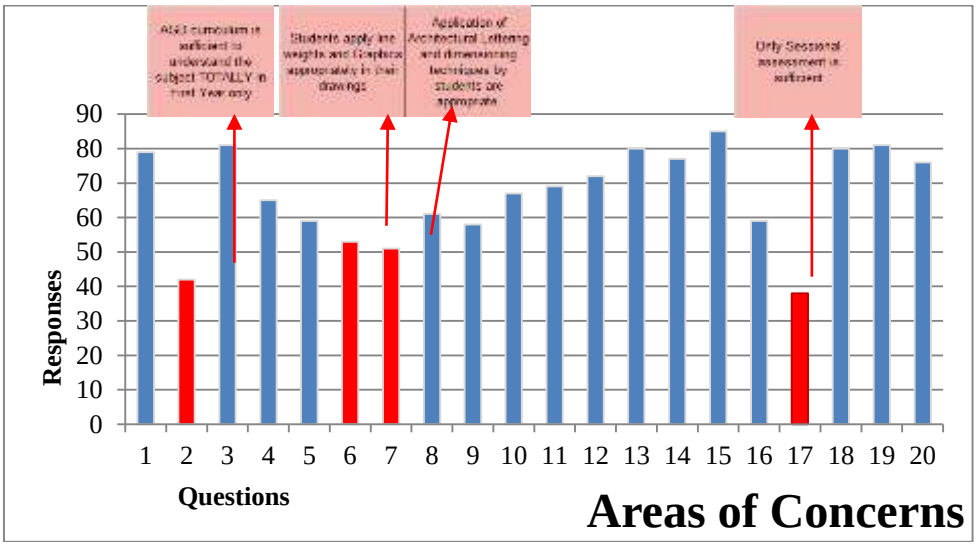

Figure 3: Areas of concern of the Course Content

Summery: Areas of concern of the Course Content

- Architectural Graphics and Drawing curriculum is not sufficient to understand the subject TOTALLY in First Year only.
- Students rarely apply Line weights and Graphics appropriately in their drawings.
- Application of Architectural Lettering and Dimensioning techniques by majority of the students are not appropriate.
- Only Sessional assessment is Not sufficient. It is necessary to have Theory examination as per the old 2010 Pattern

4. Conclusion

Students are having difficulty in communicating their designs to the faculty, and faculty members think that the correctness of the drawing is crucial to comprehending students' designs, according to the findings of a study of teaching staff and students.
In order to provide students a more comprehensive understanding of design, we as educators think, technical courses should be incorporated into design studio.
The design studio is the core subject of architectural education in an Architecture course. As a result, it is recommended that assigned coursework of parallel subjects be integrated with design, particularly technical subjects, in order to improve students' understanding of a holistic design. Dealing with technical issues early in the design process allows the student to better integrate structural and architectural design elements and provide the most appropriate scheme for the building construction system.
It has been observed that technical subjects are taught separately from design studio. Rather, each subject is taught independently, with no connection to the others. This study emphasizes the importance of having strong interrelationships with one another. As a result, an entirely new pedagogical model for teaching technical subjects to architecture students is required.
It has been highlighted that technical disciplines are taught separately from the design studio. Strong connections between the many themes are one of the

key components of the architecture studio. A new teaching strategy is necessary so that architecture students can instruct equally essential technical subjects.

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