

# Online teaching Strategies in Architectural Design studio

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**Abstract** - The architectural design studio is the vital part of Architectural education. It integrates all subjects and inculcates creativity within students. Hands-on experiences have a crucial role in studio work, but the situation forced students to shift from offline to virtual. With certain limitations of innovative and suitable online tools that align with the Architectural Curriculum and suitable strategies, the Online mode can be helpful in the architectural design studio. Students in online studios with flipped classrooms, synchronous and asynchronous teaching modes, and audio-visual tools can be more productive and innovative. The involvement of students in studio work can be improved by ensuring their participation in the class with the removal of technical hurdles and improving their understanding of online learning tools. Assessment in the architectural design studio in pre-design, design development, and final design stage and selection of assessment tools of studio work in an online mode need to be aligned with course outcome and student's understanding of tools. This paper has discussed the importance of Architectural studio in the Architectural Curriculum, limitations of online mode for studio work, benefits and effective strategies with the innovative assessment process for teaching in Architectural Design studio in Online mode.

**Key Words:** Online tool, flipped classroom, synchronous and asynchronous mode, online assessment, Screen time.

## 1. INTRODUCTION

An online course is an effective tool for one-to-one interaction and anytime learning. It can be accessible to a large group of students at the same time with convenient accessibility. Online study is a demand of society as the same quality of education accessible to a larger group of people. However, in the present pandemic, it becomes mandatory to get an education online. Online education is a technology-based education system in which teachers and students both need to ready to change the way of teaching and learning [1].

### 1.1 Development of virtual education

Online teaching, which started in the mid-1980s, is a next-level improvement of distance education, and the internet plays a catalyst role in it. online teaching, which was an

option for many universities now included in their mainstream education [2]. The forms and aspects of distance education and e-learning, Distance education started in the 19th century in England, passed through further developments, and reached in present condition. Distance learning comprises two components: correspondence courses and satellite campuses became e-learning, including communication form, delivery system, and associated technology. As per Cidral Oliveira e-learning is "a web-based learning ecosystem." Asynchronous and Synchronous types of online classes can spread education beyond geographical location.

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### 1.2 Pandemic and adoption of e-learning process in Architectural education

Due to the pandemic situation, universities had to shift from on-campus education to online education, and technology became an essential tool for education. Emergence research is having been done in online teaching. However, it still lacks in online Architectural education. one to one interaction in the studio was the only way of teaching in Architecture. Pandemic shows the other way of teaching in Architecture and opens a few opportunities and challenges [1].

## 2. LEARNING IN ARCHITECTUAL DESIGN STUDIO

Design studio has a major role in Architectural education as it inculcate the application of their creativity and knowledge. It is the integration of all subject and become core subject for the Architectural education. Studio develops critical, creative, and pragmatic thinking in Architectural students [3].

## 2.1 Design Overview

Design Overview is the first part of Architectural design studio in "Beaux-Arts" type of Architectural education [4] in that instructor explains the design problem in detail with the site and its surroundings. Details of information from the instructor depending on the student's semester. In lower semesters, the information from the instructor will be more, and in a higher semester, information from the instructor will be lower expected to collect the information students themselves. Design introduction is the first part of Architectural design studio in that instructor explains the design problem in detail with the site and its surroundings. Details of information from the instructor depending on the student's semester. In lower semesters, the information from the instructor will be more, and in a higher semester, information from the instructor will be lower expected to collect the information students themselves.

## 2.2 Predesign stage

After the introduction, in the pre-design stage, students collect information from different sources and organized the information into a document. During the pre-design phase, studies are done to analyse space requirement issues, the constraints and opportunities of the proposed site, and the cost versus the budget [5]. Students can collect the data from offline sources or browsing in net depending on availability of data [6].

## 2.3 Design development stage

In design development stage students develop their design concept based on collected information. Student's creativity and knowledge plays a major role here. Design development stage starts with traditional expression techniques which includes two-dimensional drawing on paper, three dimensional drawings on paper and three-dimensional presentation model [7]. In design development stage students need to include site geographical condition, social factor, and construction technique. In online class students have more time to spend here as they are in their home, and they can extend time. Unlikely in studio they have limited time to express themselves. Group discussion and faculty input in regular interval is very crucial here. Discussion forum and synchronous mode of interaction with students can solve this problem.

## 2.4 Post design stage

In post design stage students express themselves with presentation tools. It can be traditional tool like two-dimensional drawing on paper, three-dimensional drawing on paper and three-dimensional presentation mode or it can be digital expression techniques like vector

base digital media or object based digital media [7]. Mode of expression is very important in post design stage as this stage conveys student's overall design output.

## 3. METHODS OF ONLINE TEACHING

### 3.1 Synchronous and asynchronous technologies

Asynchronous type of education in which students learn the content with the recorded session, while synchronous type interaction between teacher and student is real-time. Blended learning, in which a substantial portion of course content is delivered in online mode, is another option to deliver course content and practice simultaneously. Massive open online course (MOOCs) is beneficial to reach diversified geographical and cultural background. Teaching aids like OHPs and PPTs need to be used for online class [8].

### 3.2 Flipped learning

The flipped classroom can be an essential method of involving students in class and getting them ready for the class. In flipped class instructor provides the content of the lecture beforehand, and students come to the class by going through the lecture notes. They participate in lectures with subject knowledge and become passive learners to active learners. The classroom can act as a discussion platform for students and lecturers.

## 3. ROLE OF INSTRUCTOR IN VIRTUAL DESIGN STUDIOS

Online classroom teacher acts as a facilitator; he/she provides the content in digital mode to the students and guide them to use it. However, one-to-one interaction in synchronous mode is advantageous for the students to learn and understand the lesson better with a group discussion with peers, interaction with faculty, and constructive activity.

As Architectural practices shifted from manual skills to technology oriented skills, Environment of studios in Architectural school also has been changed to technology driven. It gives an opportunity to include more students in design discussion and avoid repetition of information by instructor.

Group discussion, interdisciplinary teamwork and realistic design are three strategies suggested by the Soliman for design studio. Six points strategies of Elshater can be part of design studio pedagogy.

Architectural education and its market demand relationship established by the Khoderi and Nessim suggested the strategies to bridge the gap between them.

But there is a very limited source of study of online teaching in Architecture design studio [1].

### 3. IMPORTANCE OF DESIGN STUDIO IN ARCHITECTURAL CURRICULUM ROLE OF INSTRUCTOR IN VIRTUAL DESIGN STUDIOS

The design studio is an integral part of Architectural education; it is a practical implementation of all theoretical sub-jects. Students use their knowledge and creativity both in the design studio class. As per the Council of Architecture in architectural education in India, sessional subjects carry a maximum percentage of credit points compared to theory subjects. To effectively teach sessional subjects, one-to-one interaction is most crucial to clarify doubts or explain concepts. However, In the present pandemic situation, academic teaching is one of the worst affected areas. As offline teaching is not possible, Universities in India offer architectural education dependent on online teaching or blended learning. In India, 469 colleges are offering undergraduate programs. Out of 469 colleges, 90 colleges offer post-graduate programs also along with undergraduate programs.

#### 3.1 Seamless Technology

Online communication needs to be seamless. As Technology is consistently cited as a barrier for the students, suggesting the right Technology for synchronous and asynchronous communication is crucial to make group discussion successful.

#### 3.2 Planning online learning

Learning design should be based on learning objectives and outcomes but not technology driven. An aspect of the class, including learning outcome, content, activity, & assessment, needs constructive alignment. Learning outcomes need to be measurable, activities in class need to help students achieve the learning outcome. Assessment should measure the achievement of learning outcomes. The selection of technology depends on the technology literacy of the students, teachers, and students to access the technology. It should be clear to students and faculty why and how they should use technology. Selected technology should motivate the students to learn to gain attention.

#### 3.3 Selection of online tools

The selection of perfect online tools from hundreds of options is not an easy task. Examples are Google meet, Voice Thread, Jing, Zoom, etc. should use technology. Selected technology should motivate the students to learn to gain attention.

### 4. LIMITATIONS OF ONLINE TEACHING IN DESIGN STUDIOS

#### 4.1 Accessibility of internet

As a developing country, India still needs secure internet connectivity in villages and small towns. In India, internet penetration is 45%, which is less than half of the population. The speed of the internet is another issue. Fewer percentage of the population are getting highspeed broadband connectivity.

#### 4.2 Technology orientation of faculty and students

Technology has a vital role in getting online classes successful. To use the LMS for online teaching and learning, both faculty and student should be compatible with the LMS. Faculty and student should go for proper training to use the technology properly, which will make the online class more effective.

#### 4.3 Screen time for faculty and students

Screen timing for faculty and students are very crucial in the online class. Students feel strain when they are exposed to the screen for a longer duration. For that class, duration needs to be shorter and need a break in between consecutive classes.

#### 4.4 Class timing

Class timing plays a crucial role in the effective teaching of sessional subjects. In architecture colleges in India, regular shifts are morning shift, i.e., 8 am to 3 pm and day shift is 10 to 5 pm. For teaching sessional subjects in architecture, practicing architects are hired as visiting faculty to give students better exposure to current design and construction trends. Usually, practicing architects prefer morning shifts, and students can better grasp in morning time than in the daytime.

#### 4.5 Involvement of student

In regular offline classes, it is easier to involve students than in online classes. In regular offline classes, they can work in groups, and they can learn from each other. However, in an online class, they feel in isolation.

Why students do not participate in an online class:

1. Students may not be clear about the expectations and content of the class.
2. Maybe they are shy and feel nothing to contribute.
3. Maybe they have technical difficulties and not able to use the online platform efficiently.
4. Maybe students got offended by classmates.

5. Students may get discouraged if questions asked by the instructor or classmate are not aligned with the course goal.

6. Some students may dominate the discussion, and other students may not participate in the discussion.

## 5. ASSESSMENT

Assessment should be based on measurable learning outcomes; assessment should help instructors provide feedback to students in their learning process. Two types of assessment processes need to adopt during the course time formative & summative assessment. Formative assessment help students to improve themselves with intermediate instructor's feed-back. The summative assessment shows the final achievement of students w.r.t learning outcome. The assessment process can be enhanced with the technology. The assessment process and related activity need to finalize first before the selection of the technology.

Online assessment has its benefits, and it can be done from anywhere need not be physically present in class. Online quizzes can be added to the assessment process with automatic grading, and feedback can be given immediately after the quiz.

These three steps can help students engage with the online assessment process. In online assessment, students' grades can be managed easily with a learning management system.

Step 1. Students should be familiar with the online tool which will be used for the assessment process.

Step 2. Instructions should be clear for the assessment.

Step 3. Students need to know the options if technology fails during the submission.

### 5.1 Assignment submission

Assignment submission in proper format as per studio faculty instruction plays a pivotal role in completing a design studio project. In many cases, students fail to submit an assignment with proper format and assigned time due to a lack of planning. A proper lesson plan, schedule as per academic calendar, and design-related presentation need to provide to students for time-bound submission at the faculty level. For better output, faculty need to provide a link to upload submission in the LMS used by respective institutions. Continuous monitoring and evaluation of assignments also play a crucial role in obtaining better proposals for studio design problems. Students always need to be encouraged to keep a proper backup of their soft copy of the design proposal, as the last movement hardware or software problem may spoil everything due to data loss.

## 5.2 Continuous Evaluation

Continuous evaluation, comments on design helps students to follow a systematic approach and to improve the design. The display of continuous evaluation marks develops students competitiveness and motivates students to produce better work stage by stage.

## 6. CONCLUSION

For teaching sessional subjects in architectural education, the offline teaching method is the most successful and adopted. For teaching sessional subjects, one-to-one teacher-student interaction is the most crucial for effective teaching. Due to the present pandemic situation, online teaching is the only available option. Synchronous and asynchronous modes are available can be used for online teaching. The synchronous mode is helpful as students can interact directly with students. However, in online teaching, one-to-one interaction is a challenge while teaching a group of students. However, one-to-one interaction can be done by using technology like break-out rooms. For sessional subjects, site visits are mostly required for students to gain practical knowledge. Virtual site visit tours may be provided to replace physical site visits. Due to network issues on the faculty and students' sides, the faculty creates disturbance if the faculty operates and hosts the meeting. In that case, a separate teaching assistant may be assigned to host the meeting and take care of online meeting activities. However, online teaching may not be accepted and adopted initially as faculty are not compatible with it. With faculty training, proper net connection arrangement, effective LMS platform, and virtual site visit, online teaching of sessional subjects will be effective.

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