Library Progress International *Print version ISSN 0970 1052*
Vol.44, No.5, Jul-Dec 2024: P.162-169 *Online version ISSN 2320 317X*

Original Article *Available online at www.bpasjournals.com*

Identifying teaching-learning parameters for conducting an Architectural design studio" by reviewing the approach of selected Architectural colleges in India

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How to cite this article: Palak Patel, Dr. Safiullah Khan(2024). Identifying teaching-learning parameters for conducting an Architectural design studio" by reviewing the approach of selected Architectural colleges in India. *Library Progress International,* 44(5), 162-169

Abstract

While conducting an Architectural Design Studio in a School of Architecture the importance lies more in the design process than the studio outcome. The design process is a thinking process and must generate creative outcomes. Design Studio is a core subject in architectural courses or education at institutes in India and other countries overseas. All other supporting architectural subjects are normally organized to provide contributions toward the Design Studio learning. Therefore, a balance has to be sustained between Design Studio and other subjects throughout an architectural course to ensure effective learning.

This paper is an attempt to narrow down the teaching-learning parameters for an Architectural Studio conducted in an Architectural Design Studio while reviewing the architectural philosophy of various eminent and important institutes in India and a focus group discussion on factors of importance for these parameters.

Keywords

Architectural Design Studio, Teaching-Learning parameters, Design process, Architectural Philosophy, 3D Modeling

Introduction

Based on the ancient scriptures and the mythological tales of Lord Vishwakarma, the profession of building design is regarded as highly significant and honorable. History demonstrates that the profession of architecture is performed in India in one form or another and that there is a system established for transmitting knowledge through ancestry. Undoubtedly, India's architectural education has a long and varied history that has changed over the ages [1] [2]. Now, we are in the age of science and technology. It has affected how teaching and learning are conducted. Education in architecture has evolved over time, and it currently makes use of the different instruments and materials available in the classroom [3]. The educational tool has evolved and will probably change again in the days to come, from writing on paper to using a laptop and a board to creating a PowerPoint presentation. These tools help kids learn more quickly, enhance teacher-student communication, promote student involvement, etc. When we examine modern approaches, we see that their complexity is increasing significantly [4]. Managing this additional complexity calls for prepared architects who can work in multidisciplinary teams and do effective research. The learning environment is starting to transition from digital to smart in order to meet the evolving needs of educational institutions and offer a dynamic learning atmosphere [5][6]. Architecture is increasingly using technology at many phases of the design process, such as conceptualization, modeling, construction, and supervision [7]. The concept of flexibility in architecture, introduced by Walter Gropius in the 1950s, continues to evolve, integrating advanced technologies and responding to modern challenges like rapid urbanization and climate change [8]. Various advancements in Architecture are Building Information Modeling, 3D architecture modeling, VR (Virtual Reality) and AR (Augmented Reality), Generative Design, Eco-Friendly and Enduring Technologies, Advanced Materials, Artificial Intelligence etc. [9][10]. Architects may better design streetscapes that function as vibrant places for cultural expression and community interaction, as well as routes for movement, by using virtual reality to envision and edit urban layouts [11]. By combining virtual reality with architectural design, students can investigate the ways in which constructed environments influence human behavior. This helps to close the knowledge gap

between environmental psychology theory and real-world design implementations [12]. The incorporation of diverse elements, such living walls, into design pedagogy presents a chance to instruct aspiring architects on sustainable methods that tackle environmental deterioration, climate change, and human welfare [13].

It is becoming more and more challenging for architectural education to stay up with global urbanization. Due to the lack of change over the past 20 years, both the architectural pedagogy and curriculum are outdated [14]. Teaching design issues stem from two primary sources. One is that opinions on what design knowledge should be taught at what level in architecture schools are divided. This gives rise to an additional set of issues related to the creation of resources and techniques for design education. One of the most effective teaching techniques is incorporating both classroom instruction and hands-on experience into the design studio since it has a big influence on teaching architectural courses [15]. It gives students useful feedback, helps them comprehend how they performed, and offers advice on how to improve in the future [16][17].

2. Method

2.1 Survey

2.1.1 Pre-Interview

Several students, faculty experts, and former students bring together from seven top colleges of Architecture to form an action group. To learn more about the teaching approach in-depth, they were interviewed. The learning parameter is determined by examining the responses from the interviews. An assessment was conducted to ascertain the degree of teachers' acquisition of and students' contentment with learning resources, as well as the elements influencing teaching methodology in the architectural study and learning successes.

2.1.2 Learning Parameter derived out of discussion

The main ideas, principles, and directives that influence the learning process and final results for architecture students enrolled in design studio courses are referred to as learning parameters [18]. These guidelines aid in defining the studio's goals, methods, and scope and serve as a roadmap for instructors and students as they work through the creative process.

2.1.3 Relationship between learning parameter and Design Studio

To gather a consensus on the teaching and learning practices in architecture, a generic poll was conducted using any quantitative method of decision-making, and keywords related to teaching and learning parameters were determined based on the replies. A general understanding of the significance of these aspects is to be determined with the help of this survey.

2.2 Analytic Hierarchy Process (AHP)

The analytic hierarchy process (AHP), created by Thomas L. Saaty in the 1970s, is a methodical approach of classifying and evaluating complicated decisions [19] [20] [21]. An organized approach to decision-making that can be used in research to rank and assess several criteria or options is the Analytic Hierarchy Process (AHP). It offers a methodical approach to generating and combining relative scales. The aforementioned parameters are part of the questionnaire survey, and an AHP was created based on the outcome. The actions in this methodology are:

a) Determine the criteria, options, and decision.
b) Make comparisons between pairs.
c) Determine the weighted relevance of every criterion.
d) Sort the options, decision, and criteria into the highest and lowest priority.

Table 1: Pairwise comparison scale

Intensity of importance	Definition
1	Equal importance
3	Moderate importance
5	strong importance
7	Extreme importance
9	Extreme importance
2,4,6,8	Intermediate value

1/3,1/5,1/7,1/9	Reciprocal for inverse comparison

3. Result

3.1 Questionare Survey

Surveys were conducted from eight different colleges. Three teachers, three students, and three college alumni were questioned regarding the teaching approach and the few key words are extracted from the response [22].

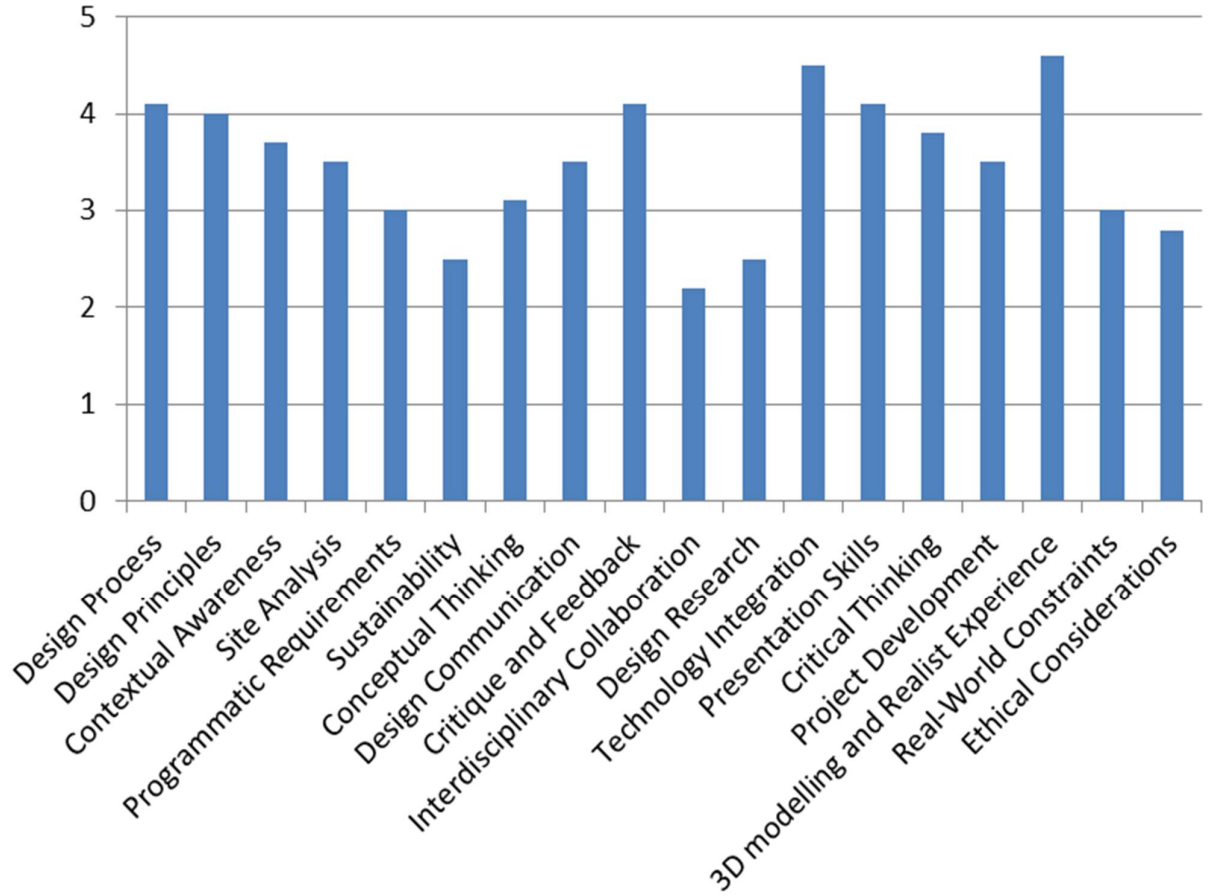

Fig 1: Score obtained for parameter from likert survey of action group.

Figure 1 illustrates that the Trend Line is at 3.5, and any measures above 3.5 are considered noteworthy and warrant further investigation. Responses to surveys indicate that students are keener to 3D modeling and realist experience in the architecture design studio, while faculty members placed greater emphasis on the design process and principles alongside alumni valued technology integration, critiques and feedback, and presentation skills.

3.2 AHP

The AHP hierarchy was created, as Figure 1 illustrates. In order to gather the insights, a focus group discussion was used to determine the criteria. Focus groups are made up of a small, varied group of people who are brought together to take part in a facilitated conversation about a certain subject or item [23] [24].

Fifteen individuals consented to take part in a focus group aimed at gaining understanding of the learning characteristics of an architecture design studio. Few are Senior Professors, Associate Professors of Indian Universities and few Practicing Architects were there

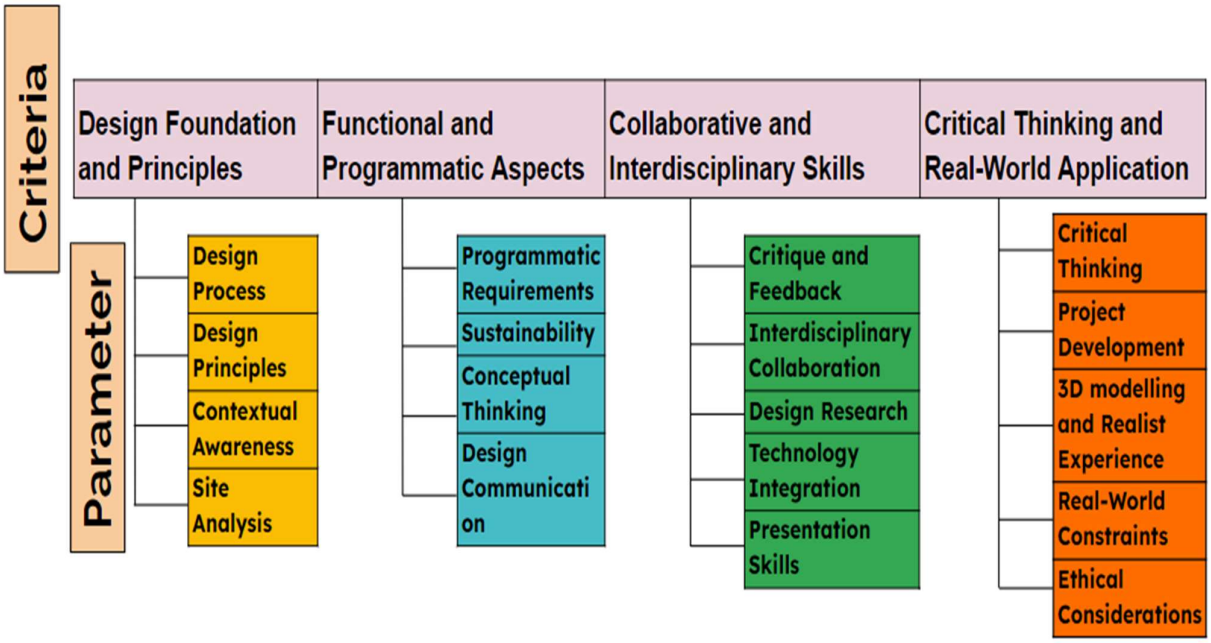

Fig 2: AHP hierarchy tree.

Pairwise comparisons are used to analyze the data based on respondents' perceptions of each of these four characteristics. When comparing the column parameter over the row parameter pairwise, the focus group was asked which parameter was more crucial than the other and replies to be included before calculating the pairwise matrix's primary eigenvector. It is simply the weighting for the criterion and represents a vector of priority in ratio scales.

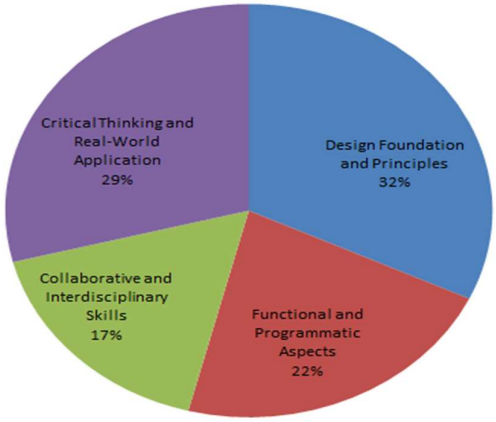

Fig 3: Final priority of vector for the criteria

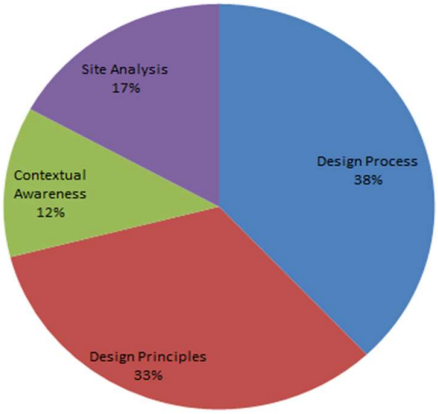

Fig 4: Final priority of vector for design foundation & principle

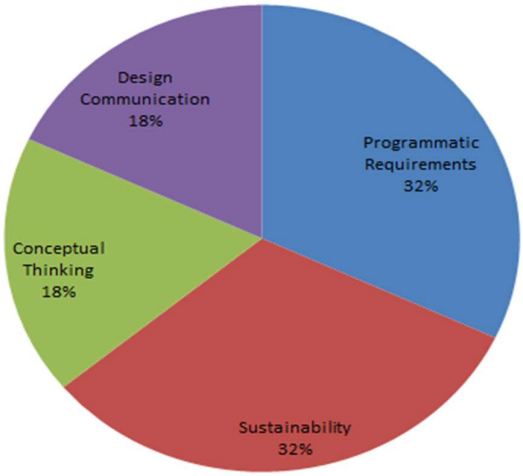

Fig 5: Final priority of vector for Functional & Programmatic Aspects

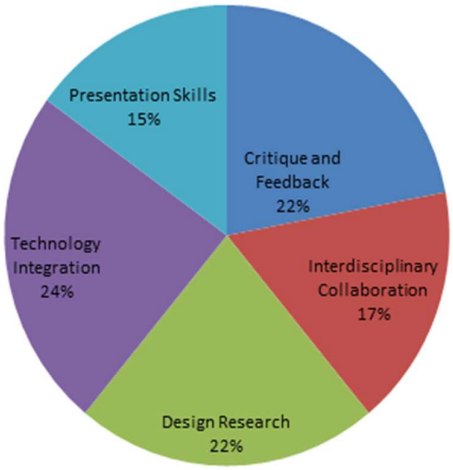

Fig 6: Final priority of vector for Collaborative and Interdisciplinary Skills

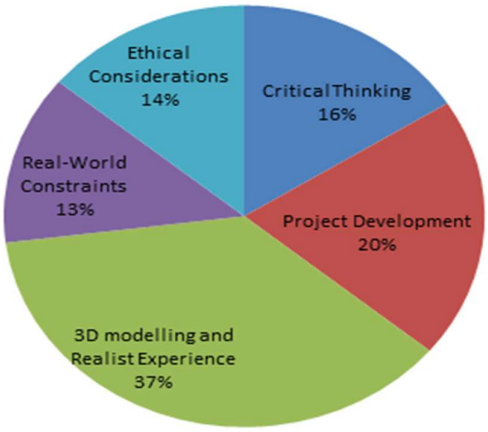

Fig 7: Final priority of vector for Critical Thinking and Real-World Application

Table 2: Final Weightage of parameter derived from AHP

Criteria	Criteria weight	Parameter	Local weight	Global weight
Design Foundation and Principles	0.32	Design Process	0.38	0.1229
		Design Principles	0.33	0.1066
		Contextual Awareness	0.12	0.0386
		Site Analysis	0.17	0.0552
Functional and Programmatic Aspects	0.22	Programmatic Requirements	0.32	0.0697
		Sustainability	0.32	0.0693
		Conceptual Thinking	0.18	0.0395
		Design Communication	0.18	0.0385

Collaborative and Interdisciplinary Skills	0.17	Critique and Feedback	0.22	0.0365
		Interdisciplinary Collaboration	0.17	0.0289
		Design Research	0.22	0.0366
		Technology Integration	0.24	0.0395
		Presentation Skills	0.15	0.0252
Critical Thinking and Real-World Application	0.29	Critical Thinking	0.16	0.0478
		Project Development	0.20	0.0578
		3D modelling and Realist Experience	0.37	0.1084
		Real-World Constraints	0.13	0.0394
		Ethical Considerations	0.14	0.0397

The design process and design principles are regarded as the most crucial learning elements in an architectural design studio. Now, the importance of each criterion in the teaching and learning process is weighted. It is possible to discover a common parameter to further identify an evaluation schema for a studio by merging parameters with weights smaller than 0.05.

Design Process	0.12
Design Principles	0.11
Contextual Awareness	0.04
Site Analysis	0.06
Programmatic Requirements	0.07
Sustainability	0.07
Conceptual Thinking	0.04
Design Communication	0.04
Critique and Feedback	0.04
Interdisciplinary Collaboration	0.03
Design Research	0.04
Technology Integration	0.04
Presentation Skills	0.03
Critical Thinking	0.05
Project Development	0.06
3D modelling and Realist Experience	0.11
Real-World Constraints	0.04
Ethical Considerations	0.04

Fig 7: Calculated weightage of importance using AHP

Design Process	4.1
Design Principles	4
Contextual Awareness	3.7
Site Analysis	3.5
Programmatic Requirements	3
Sustainability	2.5
Conceptual Thinking	3.1
Design Communication	3.5
Critique and Feedback	4.1
Interdisciplinary Collaboration	2.2
Design Research	2.5
Technology Integration	4.5
Presentation Skills	4.1
Critical Thinking	3.8
Project Development	3.5
3D modelling and Realist Experience	4.6
Real-World Constraints	3
Ethical Considerations	2.8

Fig 8: Rating Scale Survey Response from sample

4. Conclusion

As the main and most popular teaching instrument in architectural education has been Design Studio. The identified primary teaching-learning factors that were identified from both the survey approaches from action group and focus group are the Design Process, Design Principles, 3D modeling, and Realist Experience.

Research, idea development, schematic design, design development, and final presentation are all steps in the design process that may be used by comprehending and using an organized approach. Similar to this, design principles include stressing basic elements like harmony, balance, scale, rhythm, balance, proportion, contrast, and unity to produce visually beautiful and useful designs. Similar to this, design principles include stressing basic elements like harmony, balance, scale, rhythm, balance, proportion, contrast, and unity to produce visually beautiful and useful designs.

A framework providing 3D modeling and lifelike experience offering immersive experience of design proposal may be implemented to improve the teaching-learning in the Architectural Design Studio. The design process and design concepts are essential components of any design studio, and they may be reinforced by the addition of 3D modeling and realistic experience.

Further as enhancement to this research author is looking in to develop a framework to integrate technologies like VR the design studio and assess the performance of participating students.

References

1. Roy, M., An Exploratory study on Origin of AI: Journey through the Ancient Indian Texts & other technological descriptions, its past, present & future., Turkish Online Journal of Qualitative Inquiry, Volume 12, Issue 7, July 2021
2. Till, J. (2012b). How will architects be educated in 20 years time. The Future Architectural Education. Building Futures Think Series. March 2015
3. Azizinezhad, M., Amini, A., The role of instrument technology in teaching architecture, Procedia - Social and Behavioral Sciences 28 (2011) 877 – 881
4. Kalisperis, L.N & – Liakata, A. 1998. Architectural Design Studio : Digital and Traditional. International Workshop Proceedings. Leuven, Belgium. 13 – 14 November. pp 73 – 81.
5. Mhlongo,S., Mbatha,K., Ramatsetse,B., Dlamini,R., Challenges, opportunities, and prospects of adopting and using smart digital technologies in learning environments: An Literature review, Heliyon 9(6), 2023
6. Ramsden, P. (2003). Learning to teach in higher education (2nd ed.). London and New York: Routledge.
7. Pan, Y., Zhang, L., Roles of artificial intelligence in construction engineering and management: A critical review and future trends, Automation in Construction, Volume 122, February 2021
8. Anas, M., Khan, S., & Nisar, Z. (2017). Flexible architecture: Optimization of technology and creativity. *International Journal of Engineering and Technology (IJET), 9*(3S), 510-520. https://doi.org/10.21817/ijet/2017/v9i3/170903S078
9. Ehab, A., Burnett, G., Burnett, T., Enhancing Public Engagement in Architectural Design: A Comparative Analysis of Advanced Virtual Reality Approaches in Building Information Modeling and Gamification Techniques, . Buildings 2023, 13, 1262
10. Taranilla, R.V., Olivares, S.T., Gutiérrez, R.C., Calero, J.A.G., Effects of virtual reality on learning outcomes in K-6 education: A meta-analysis, Educational Research Review Volume 35, February 2022, 100434
11. Safiullah. (2018). Beyond a channel for movement; Inquest of street layerings in urban realm. *International Journal of Creative Research Thoughts (IJCRT), 6*(2), 369-373. https://www.ijcrt.org
12. Safiullah. "Third-Place: It's Components and Communiqué." *International Journal of Creative Research Thoughts (IJCRT)*, vol. 6, no. 1, 2018, pp. 364-368. *IJCRT*, https://www.ijcrt.org.
13. Goel, M., Jha, B., & Khan, S. (2022). Living walls enhancing the urban realm: A review. *Environmental Science and Pollution Research, 29*(28), 38715–38734. https://doi.org/10.1007/s11356-022-19501-7
14. Colomina, B (2012). Radical Pedagogies in Architectural Education. The Architectural Review: The Education Issue, (28 September 2012)
15. Gelernter,M.,1988. ReconcilingLecturesandStudios.J.Archit. Educ. 41(2),46–52.
16. T.A.R. Siddiquee, Mohd. Salman. Architecture Education: Rubrics in Google Classroom as a Tool of improving the assessment and learning, Springer proceedings in complexity,2024
17. Ritrovato M, Faggiano FC, Tedesco G, Derrico P. Decision-oriented health technology assessment: One step forward in supporting the decision-making process in hospitals. *Value Health.* 2015;18:505–11
18. Demirbas,O.O.,Demirkan,H.,2007.Learning styles of design students and the relationship of academic performance and gender in design education.Learn.Instr.17,345–359
19. Saaty TL. *Group Decision Making and the AHP.* New York: Springer-Verlag; 1989
20. Saaty TL. *The Analytic Hierarchy Process.* New York: McGraw-Hill; 1980
21. Saaty T. *Fundamentals of Decision Making and Priority Theory with the Analytic Hierarchy Process.* Pittsburgh, PA: RWS Publications; 2006.

22. Akçayır, M., & Akçayır, G. (2017). Advantages and challenges associated with augmented reality for education: A systematic review of the literature. *Educational Research Review, 20*, 1-11. https://doi.org/10.1016/j.edurev.2016.11.002
23. Vaidya OS, Kumar S. Analytic hierarchy process: An overview of applications. *Eur J Oper Res.* 2006;169:1–29
24. Forman EH, Gass SI. The analytical hierarchy process – An exposition. *Oper Res.* 2001;49:469–87