

Integration of sustainability in Architecture Education

Sonia Chaudhary

Abstract— Architectural education is the weapon which can fix the future of the architectural cities and buildings towards the sustainability. putting all the efforts towards applying the sustainability strategies can decrease the challenges related to the environment, climate change etc. sustainability is the main core of architecture and it is important to integrate this into the architecture college curriculum. many a times teachers are trying level best to introduce sustainability factors into the design projects which are being given in as a design studio exercise. architecture design is the core subject of the architecture education and design studio is the basic where sustainability could be introduces as a class design project to the students. this will make students to make a decisions related to the planning and designing on the direction of the sustainability. this paper will discuss the methods of integrating sustainability in the design studios and will discuss the curriculum of various national and international architecture college, analysing the design studio projects.

Index Terms— architecture education, architecture pedagogy, design studio, environment, integrated method, sustainability, teaching methods

1 INTRODUCTION

Construction of a building are raising the environment concerns. to decrease this effect it is an urgent need to introduce sustainability factors to the budding architects so that this issue can be resolved.

The International Union of Architects (2008) has identified that main goal of architectural education is to: generate intellectual maturity, ecological sensitivity as well as social responsibility among citizens. It is important for future architects to be aware of the impact of their thoughts and actions on the future of their surrounding environment and community (Shari and Jaafar, 2006).

Therefore, incorporating sustainability in the architecture education is very much significant and there are lots of proofs who themselves state that education system is also very much willing to improve teaching methods and techniques to involve sustainability into the curriculum. but, this is very challenging as the universities have currently crowded course contents and many universities has claimed that teaching techniques and methods needs to be changed to include sustainability. considering the integrated teaching could be claimed to be the solution for the issue. let us see how this could be the remedy in the paper further.

This paper is concerned with the world wide Architectural Education and will surveyed the current architectural curricula in a number of universities. the paper will further examine the constraints and opportunities for incorporating sustainability

2 literature review

The Education Policy for Sustainable Built Environments, the guidelines by united nation supports the role of universities towards sustainability and encouraged to develop relevant strategies through teaching and research (UNEP, 2010).

The Environmental Design in University Curricula and Architectural Training in Europe (EDUCATE project) got funded by the European Commission - Energy Agency for Competitiveness and Innovation (EACI).

The project was started on June 2009 and carried till May 2012.

the main focus of the project was to develop guidelines for the integration of sustainability in the teaching and practice of architecture. The plan of action involves developing university curricular analysis methods, which concentrate on sustainability and energy efficiency teaching. The methods varied from verifying working class hours to the theme and integration with design studio models of seven curricula of Architecture in Europe (EDUCATE, 2011, Dourado & Amorim, 2016).

2.1 THE ROLE OF THE DESIGN STUDIO IN SHAPING AN ARCHITECTURAL EDUCATION FOR SUSTAINABLE DEVELOPMENT: THE CASE OF BEIRUT ARAB UNIVERSITY

In This paper author has investigated the role of the design studio and the deep understanding of sustainability in architectural education. according to him design studio is the main forum of creative exploration, interaction, and assimilation in architectural education also stated by prof. ashraf a. salaam. author has formulated the potential role of architecture education as a tool to measure the sustainability. further the author state that The changing attitude towards architectural design highlighted teaching sustainable design to architects as a fundamental base for their study. However, the challenge is to put this need in such an operational way by Esmail Baniassad (2001), Chair of Architecture at Chinese University of Hong Kong emphasizes this point as he says "The challenge of sustainable design education lies not in our recognition of the need for a change in our values. It lies in how to take it beyond a mere change in our verbal vocabularies. The challenge is to go beyond intentional to operational.

author has achieved the conclusion by focusing on Wrights (2003) three classification of different approaches to introducing sustainable design into the curriculum regarding its degree of intervention. the first approach is based on the belief that sustainable design is so fundamental for the architecture that architecture is nothing if it is not sustainable. second ap-

proach needs to highlight the technical aspects of sustainable design with the possibility of understating the need in the design programme. The third approach is to integrate the sustainable design understandings into the curriculum, and curriculum needs to be reviewed and revised.

2.2 Sustainable Architectural Design Education: A Pilot Study in a 3rd Year Studio

interesting fact about the paper is the author has discussed Some of the historical examples of the teaching methods in architectural education

-The three principles of Ecole education: freedom, competition, and variety (Carlhian, 1979).

- The Bauhaus prime education objectives depended on integrating theory and application. Constructivist design studio concepts (Kurt, 2012).

-Integrated public interest design studio concept (Anderson, 2012).

- Charrette design studio technique (Pernice, 2013).

- Embracing deep learning approach for principles and practices of sustainability (Sarhan & Rutherford, 2014).

- Learning pyramid principles that supported deep learning not service learning. Therefore, the questions were started with; explain, compare, and construct not describe (Wood, 2004).

- author conducted a live case study on the 3rd year students where they were given a problem and teachers and students have evaluated the sheets presented by the students. author followed a new studio pedagogy The entire evaluation of the students' work was divided into two parts. First part was design process evaluation, embracing the sustainability integration (40% of total grade). Second was finished project evaluation (60% of total grade); of which is 60% was dedicated purely to the design aspect and 40% for the degree of integration of the sustainability principles in the project.

The trend between design process grades representing the new studio pedagogy structure and final project grade of the students showed a positive result.

3 findings

Studying the curriculum of many architecture schools this has been observed that in majority of the schools sustainability is not the part of the curriculum but instructor is trying to incorporate it in the lectures but due to the limited teaching hours students are not able to cover up in the experimental designs. in few schools after interviewing this has been discovered that teachers are figuring some new pedagogical methods

and teaching methods to instruct the students about the importance and need of sustainability.

school 1. sustainability has been introduced as an elective in the fourth year, whereas sustainability should be taught right from the beginning of the first year that each and every year various component can be covered.

school 2. teachers introduced the design problem but students coming with the designs could not be claimed as a sustainable designs though it was mandatory to incorporate sustainability factors in the design, but students are doing submission just for the sake of submitting it on time.

school 3. The curriculum is well planned and covering management, sustainability, and green architecture. Green building standards are taught to approach the sustainability on site, energy consumption, thermal comfort, design aspect, management, etc.

school 4. though students are not incorporating sustainability in the designs but after interviewing students this was analysed, students had a thorough knowledge of the green parameters because teachers are encouraging students to read and believe if student is reading and is able to understand could do designing with the tools which will effect the design.

Thus, many interesting facts were known while conducting the interviews and surveys. every college follows particular school of thoughts so they have very interesting teaching models and methods.

4 Recommendations

In view of the literature review and findings, some plan of actions could be recommended.

a. sustainability factor could be enhanced by organising workshops, seminars etc. hence, with the participation of researchers, academicians the new teaching methods and techniques could be evolved on such platforms after the brainstorming and discussion.

b. if sustainability could be the mandatory part in the architecture profession failure to which penalty are casted. this could be the source of revising the curriculum and incorporating sustainability in the already crowded curriculum.

c. updating the curriculum as per the current society needs and issues.

d. instructors should prepare the design schedule and should introduce sustainability part to the students. this will lead to add sustainability with different approaches and capabilities the design studio.

e. such type of design project could be undertake like covering a non sustainable building to a sustainable one.

5 Conclusion

This paper was intended to study the integration of sustainability within the architectural education. The thing was first understood by the literature study and analysing the research papers of other authors and understanding their thoughts after this, on the basis of literature study and reviews the questions has been asked to the faculty and principle of the various architecture schools and on the basis of the replies gathered the recommendations are suggested.

This is find that inspite of the limited teaching hours and grades still teachers are putting efforts in this regard, revising of the architecture course curriculum is highly needed and in respect of not only sustainability but many occurring issues and needs go the environment and society could be catered by the students who are the prosperous architects of the nation.

Acknowledgment

The author would like to thank faculty members and the students of architecture department, jamia millia islamia.

REFERENCES

1. Ibrahim, N. (2008). Sustainability and the Architectural Education: Are we there yet. SENVAR+ ISESEE.
2. Sarhan, A., & Rutherford, P. (2014). Integrating sustainability in the architectural design education process- taxonomy of challenges and guidelines. Paper presented at the Fusion-Proceedings of the 32nd eCAADe Conference.
3. Walker, J. B., & Seymour, M. W. (2008). Utilizing the design charrette for teaching sustainability. *International Journal of Sustainability in Higher Education*, 9(2), 157-169.
4. Beamish, A., (2002). Strategies for international design studio: using information technologies for collaborative learning and design. In A. M, Salama, W., O'Reilly & K. Noschis (Eds.), *Architectural education today, cross-cultural perspectives* (pp.133- 142). Lausanne: Comportements.
5. Dale, A., Newman, L. (2005). Sustainable development, education and literacy. *International Journal of Sustainability in Higher Education*, 6 (4) 351-362.
6. Salama, A. M. (1995). *New trends in architectural education, designing the design studio*. New Jersey: Tailored text & Unlimited Potential Publishing.
7. Salama, A. M. (2002). Environmental knowledge and paradigm shifts: sustainability and architectural pedagogy in Africa and the Middle East. In A. Salama, W. O'Reilly & K. Noschis (Eds.), *Architectural education today, cross-cultural perspectives* (pp.51- 62). Lausanne: Comportements.
8. International Union of Architects (UIA). (2008). *UIA and Architectural Education Reflections and Recommendations*. Paris: International Union of Architects.