

“Environmental awareness and architectural pedagogy.”

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Abstract-

Construction industry is governed by technological innovations and digital advancements to make any dream of a fully serviced building possible, irrespective of finite resource availability, ecological deterioration and climate alteration. Architectural practitioners and educational personals have been challenged by the current climate crises to promote sustainable architecture. The aim of this paper is to analyze the urgency to integrate sustainable environmental design in the practice of architecture by implementing various set of actions in pedagogy from the beginner level at architecture curriculum.

Keywords- sustainable architecture, environmental awareness, architectural pedagogy, education.

Introduction:

Buildings are accounted for around half of worldwide energy consumptions, significantly contributing to global warming and the alteration of natural ecosystems, as proved by reports [1].

In the context of the current climate crisis and in consideration of the impact that buildings have on the environment and the growing ecological awareness required by new regulations concerned with the construction sector - the role of higher education as a means of comprehensively introducing new generations of architects to the principles and practices of sustainable environmental design is becoming highly significant [2].

The urgent requirement to transform the existing architectural practice to the highly efficient and environmentally sustainable building design governed by:

- Lack of implementation of known knowledge of sustainable architecture in practices resulting into failure to respond to the climatic crises.
- Schools of architecture have been relatively ineffective in developing the attitude for sustainability in the design studios.

- The existing university course curriculum does not address present day needs towards climate responsive design.
- Need to revise the acts and building regulations of professional bodies.

In this paper the aim is to analyze the urgency to integrate sustainable environmental design in the practice of architecture by implementing various set of actions in pedagogy from the beginner level at architecture curriculum.

Architecture of today

Architecture came into existence to fulfil the basic need of shelter as it progressed holding the hands with technology. Any developed country is looked upon by its infrastructural developments. And along with architectural concepts and designs, technology plays a very crucial role in making these architectural dreams come true. But at the same time the adverse effects these technological advancements is making over natural environment is disregarded. No doubt architecture is not alone responsible for all the effects but architecture and buildings can bring a revolution in the perception of environment.

The architectural profession is recently witnessing a significant resurgence in the request for the integration of passive and hybrid environmental strategies and techniques in building design, in order to mitigate the impacts on the ecosystem and promote the adaptation of built environments to expected climate alterations [3].

At the same time, it would be debatable as to whether architectural practices should be biased towards contemporary and fashionable design or to be environmentally efficient. Also the advancements of various green building certifications to the buildings have raised the bar to produce more of climate responsive green designs. Most organisations claim to be more sustainable with their architecture, yet not many of the buildings built have satisfied the energy efficiency level. Also the buildings marked sustainable have compromised on the aesthetical aspect of architecture and sometimes the quality of ambience it

created. As a matter of fact, any design should be responsive to human needs, physical conditions, economical, social aspects, and creative. Therefore in order to inculcate sustainable design into architecture it is important to constantly consider a further element of the location of the building and the impact of it on the environment as a whole [4]. Thus to address modern day building to finite resource availability, ecological deterioration and climate alteration it is important to have a proper methodology. And the same time the issues are growing bigger day by day and the gap between the modern and the natural is increasing, it is clear that the sustainable approach needs to be implemented at the very basic stage of architectural design. To facilitate this process proper training to the architects with timely updates and adequate research is necessary.

Design studios need to emphasize to preserve: Architectural Sustainability already exists in Indian Culture

Sustainable architecture has always been part of Indian architecture. Looking deep into Indian culture, India has very strong roots of worshipping *nature* as god. Indians worship the rain god, the sun god. In Vedas, Indra is the supreme god; he is the god of lightening, thunder, storms, rains and rivers [5]. India is believed to destroy the evil and bring rain and sunshine- the friend of mankind.

These religious feelings of the Hindus reflect in their architectural designs. For instance, a “Tulsi Katta” a holy pot for Basil plant is the tradition of every Indian house since centuries ago. Basil plant possesses many medicinal properties and is worshiped every day and hence is believed to bring in good health.



Figure 1: Tulsi katta at Vijay Vittala, Hampi, Karnataka.

Similarly, history of architecture plays another important role in the developing of sustainable architecture. India is rich with its heritage properties designed to sustain forever. One such iconic example is the Taj Mahal, one of the Seven Wonders of the World. And this proves the strong architectural planning, the concept, engineering, and the material understandings that Indians lack no behind since time.

It can thus very rightly be said, in a Country like India, to first look inside ourselves for much of the research being done already by our Indian ancestors. These ancient architectural marvels have always been an inspiration for the designs which will help lay a strong foundation for long lasting sustainable architecture. For example; Architect Manit Rastogi from Morphogenesis designed The Pearl Academy of Fashion in Jaipur using a number of old technologies to create "an environmentally responsive passive habitat." [6]

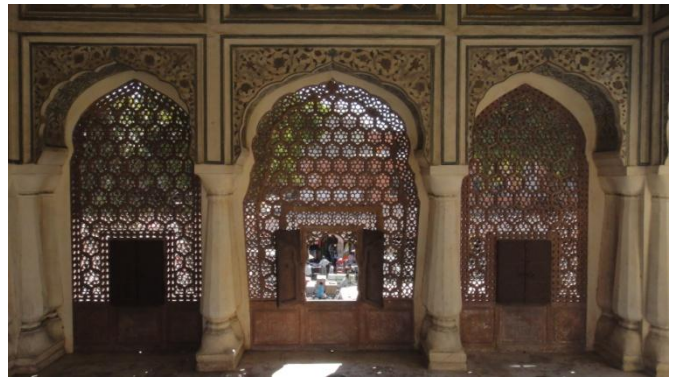


Figure 2: Jali design for façade at Hawa Mahal, Rajasthan.

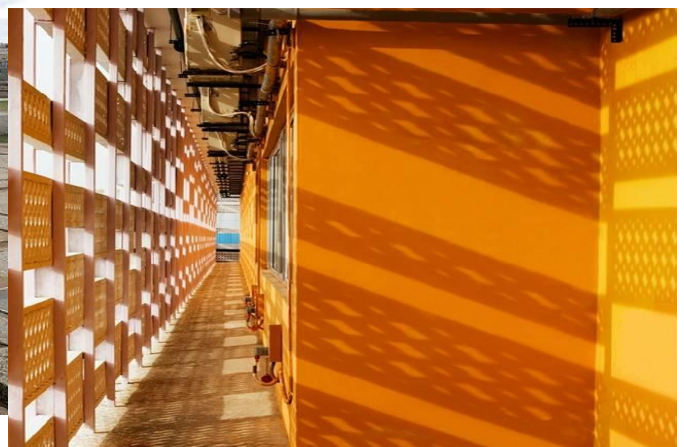


Figure 3: Inside: Pearl Academy of Fashion in Jaipur.



Figure 4: Facade: Pearl Academy of Fashion in Jaipur.

Had Ar. Rastogi not studied the region's architecture and the ability of the existing structures to be sustainable, he would have not been able to come up with such fine way of being sustainable. He has given the building new clothing yet maintained the city's fabric. It marks' a great example of a design evolved from the past architectural principals yet being contemporary and sustainable.

Thus it can be said that understanding the entire context of the project along with the site, and background of the region in which it exists is important. History of architecture makes a strong foot in developing the future of sustainable architecture if the approach of delivering this subject is slightly modified. History need to be looked upon as not only the study of existing building design, the structure, its form, background and material study but the performance of the building, the ability of the building's sustainability through ages and also the causes of its failure. Only then the future architecture that is well equipped and stable can be designed as it will be based upon the detail study of the past knowing its assets and developed weaknesses.

Evaluation of opportunities for sustainability in the current architectural syllabus

In India, architectural curriculum is developed and monitored by Council of Architecture (CoA). This is a

five year course composed in ten semesters. As stated on the CoA, minimum standards of architectural education regulations-2015 page, the Bachelor of Architecture course is offered with sustainable architecture as an elective subject in the last semester of the course [7]. Here it will not be wrong to say that presently it is left merely to the faculty of architecture to get involved with sustainable architecture and introduce various aspects of these to the students from the basic first semester design studios etc.

Contradictory to this, taking into consideration various environmental issues, department of environment, Shivaji university has introduced a new subject called Environment studies in 2008 [8]. This is mandatory subject to all the courses offered by the university. It is designed to generate general awareness about various environmental issues for all the second year students. Also as this a very generic subject it is not very effective from architectural aspect of education and future buildings in architecture. In addition, there are various other core subjects making this one a little overlooked.

A small survey conducted recently by a group of students from architecture department, showed that although there is general awareness amongst the people they lack implementing the due actions to reduce environmental deterioration at individual level.

Incorporating sustainability efficiently in Architectural Pedagogy

For many years, architectural schools have been teaching environmentally responsive designs along with energy efficiency in buildings. Invariably, however, these programs are competing with various other core options. Further to this students lack integrated design process as the lecture courses are fragmented and the application of the course work is not fully adopted. The sensitivity towards environmentally responsive design is moving slightly from a specialized module to more important position in the architectural design. However, though this discernment has not yet been harmonised with architectural pedagogy. We need to have a consistent pedagogy fully implanting sustainable environmental design in the heart of architectural curriculum. The current professional and pedagogical barricades that hinder the inculcation of the sustainable environmental design in the practice and education of architecture need to be overcome. Implementing following actions will help overcome these hurdles and carve a path towards greener future:

Education is the foundation of any development it is highly important to introduce the students from the very first year to this perception towards sustainable environmental design. Moreover, the syllabus needs to be revised and updated as per the current need of time.

Sustainable architecture should not be looked upon only as one elective module of the entire course but needs to form integral part-by-part of throughout architectural curriculum. And it could be best done through design studios.

History of Architecture needs to be given more priority from the very basic semesters; not limiting the subject only to a theory and paper based grading system. In fact it needs to be inculcated in the design concepts and to flow in the studios with the new teaching approach as discussed.

The design brief of one project of each successive year of the entire curriculum could be based only on a blend of sustainable architecture, where modern architecture could be evolved from the studies based on ancient architectural trends and designs. That will built progressive sustainable designs.

Along with introducing the next generation of architects this new curriculum, the present architectural practitioners and educators have to be introduced to this new vision. Training camps have to be organised and virtual lessons can be established.

Further to encourage implementation of sustainable learning a huge platform for sustainable building designs needs to be developed. Various competitions, strict grading systems, ratings and marking systems under a common government agency can help set good grounds.

Lastly, not alone architects are responsible to make the change happen and hence it is important to make other people of the society to understand, perceive and follow the new architecture of sustainable environment. The government and the ministry play an important role here to enforce strict laws and acts accordingly.

Adoption of the proposed pedagogical framework, curricular structure and qualification criteria by academic institutions and professional bodies. This will contribute to deconstruct the pedagogical barriers to the effective integration of sustainable environmental design in higher education and in the practice of architecture, and will fill a 'gap' in current accreditation and registration prescriptions as reflected in the loose requirements of most regulatory bodies concerning the

implementation of energy-related environmental principles in the training of professionals.

Conclusion

The architectural graduates have to respond to current market demands which include a range of integrated problems to assure greener, sustainable future to human settlements and to respond to the present day climatic crises. Other abilities along with creative design have taken the spot in the design industry.

The architectural education that cultivates not only creative design but a deep integrated and interconnected understanding of all modules and disciplines. To promote awareness, ethical designs and purposeful actions it is hoped that such initiatives will lead to a better architectural practices of quality and addressing the need of environmental situation.

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