

Technological tools and their benefits in imparting Architectural education

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Abstract: Technology has made immense progress globally and has become a strong tool in communication. Finding its use in diverse fields and various levels it has become a strong aid for classroom deliverance of lecture and interaction between teacher and student. The paper will be based on a theoretical study and deliberation of imparting education in the discipline of Architecture with use of state-of-art technology. The study intends to consider both aspects that are looking into the pros and cons of the technology driven tools used in teaching and learning Architecture.

The debate on the benefits of technology driven tools in imparting architectural education continues till today amongst various generation of architects. Like amongst those who were more primitive compared to those who have seen the advancement of technology in the profession and its education and thirdly those who are the 'present' and took their initial notes over the computer. In this context the paper will discuss around the larger framework of how technology has brought meaningful change and progress in the classroom and the industry. Thus giving an insight on whether the benefits are positive and has technological advancement has improvised education and learning. Some questions may continue to exist of technology being misused by the students and whether improvised educational methods have increased industry productivity.

Towards conclusion the paper will attempt to pave guidelines for use of technological tools in architectural teaching and learning, preventing misuse, positive productivity and quality work.

Keywords: Technology, Education methods, Architectural education, teaching and learning

I. INTRODUCTION

The usage of technology in communication has now become a necessity. It is a part of our lives with people communicating through emails, faxes, mobile phones, texting services, video conferences and social media channels. With time, more emerging technologies are going to completely change the way we communicate and it will be up to us to embrace them or not. [1]

The typical Indian classroom which is characterized by students sitting through hour-long teacher monologues is now gradually adopting digital technologies like computers, laptops, and tablets in an attempt to make the classroom environment more inclusive and participatory. Use of digital technology has provided teachers new mediums for imparting education and has slowly evolved the pedagogy for digital education.

The case for technology in education in India is quite strong. The CBSE has instructed affiliated schools to set up digital classrooms from primary to secondary level for every subject. As per the directive of CBSE, every student must have significant knowledge of computers and the internet to empower them to learn using digital technology medium. [2]

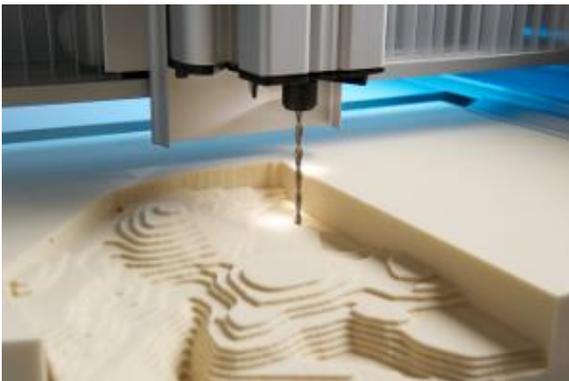


Fig.1. In many areas schools of architecture have jumped on the technology bandwagon, both in their traditional course offerings and in courses which are designed to meet the continuing education needs of professional architects

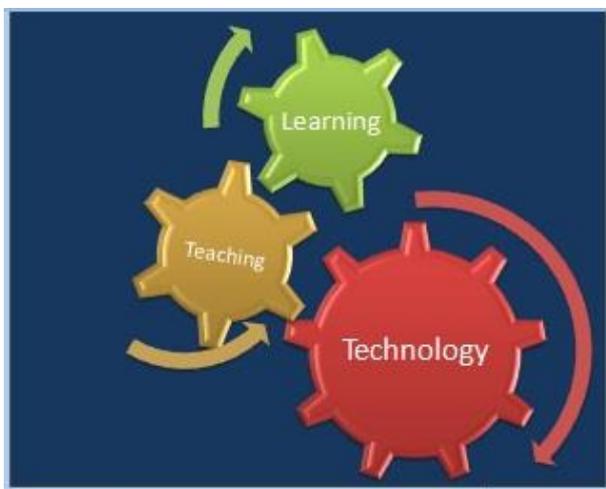
Methods of communication in education, including teacher-student communication are going through noteworthy shifts. These reflect the culture of a new generation of students, as well as the rapid growth and progress of communication technology.

Professional education is no exception to this trend of incorporating these technologies in their courses.

In many areas schools of architecture have jumped on the technology bandwagon, both in their traditional course offerings and in courses which are designed to meet the continuing education needs of professional architects. This enthusiasm is reflected in various publications and conferences which have been devoted to the uses of information and communication technologies in architectural, engineering, and design education. Whether technology has brought meaningful change in the classroom or not is looked into in this paper.

II. TECHNOLOGY AND ARCHITECTURAL EDUCATION

Whenever the question of technology in architectural education comes up, there is a general tendency to understand technology as a range of tools we select and use to achieve certain ends in relation to well defined pedagogical objectives. Tools ranging from softwares and computers to operating systems and networks are usually taken as given and handled internally from the moment they step into our educational environments. Without a doubt, these are important aspects of the technologies we use and they require specific attention. But they form a small part in a wider perspective which has not received the attention it deserves till now. This wider perspective contains the essential theories of architectural education-technology relationship. In short a critical analysis of architectural education-technology relationship is what should be done. [3]



The problem as well as the solution or improvement does not lie so much in how we use existing technologies or how we teach our students to use them, but in the way we understand our technologies and their evolution and relate to them.

Fig.2. Architectural education's current relationship to technology enables a certain type of technology which does not necessarily represent or is concerned with architectural education's pedagogical aims and objectives but with generic common place objectives of rationality, efficiency, accuracy, speed, etc.

A. Existing Architectural Education - Technology Relationship

The general tendency to understand technology as something which is neutral and an external entity to architectural education is obvious in the UNESCO Charter for Architectural Education, Criteria for Architectural Education. 1996, which quotes:

“Modern personalized computer technology and the development of specialized software make it imperative to teach the use of computers in all aspects of architectural education. Adequate laboratories, facilities for research, advanced studies, information and data exchanges for new technologies should be provided at schools of architecture” (UIA, April 1996)

The above quote has been produced to form guidance and be the criteria to educate the future members of architectural profession from a technological point of view. One can make important deductions from this statement which gives us ideas in terms of the way architectural education currently relates itself to technology and technological developments. First is the understanding that the modern computer technology and development of specialized software

is something external to architectural education that necessitates certain measures to be taken within architectural education. These technological developments which can be rightly attributed usually to a generic project (e.g. computer technology) or a professional project (i.e. specialized software), make it imperative to teach them. It is not something we can consciously select or ignore, but a reality that we have to accept and adapt. This reality is accepted as given and not questioned.

A similar approach can be seen in the RIBA's Criteria for Validation (2003). The section 'Communication' states that the students are expected to demonstrate the 'ability' to:

a) *'Use visual, verbal and written communication methods and appropriate media (including sketching, modelling, digital and electronic techniques) to clearly and effectively convey and critically appraise design ideas and proposals' and*

b) *'Use the conventions of architectural representation from two-dimensional and three-dimensional graphics to computer generated and physical models... having critically appraised the most appropriate techniques available' [4]*

Whereas the definition appears all-inclusive, the problem can be apprehended from the initial definition of the word 'ability' at the beginning of the criteria as "skill in relating specific information to the accomplishment of tasks. Students can correctly select information that is appropriate to a situation and apply it to the solution of specific problems" [4]

The 'most appropriate technique available' covers the technological tools available to us as well as the techniques of using them. These are given, existing and external entities presented to us where we select and apply to the solution of specific problems. As new technologies continue to appear and new techniques are developed parallel to their usage, selecting the appropriate ones available and applying them to solve problems is the suggestion made in the statement. This understanding which has now been registered into architectural educational guidelines and followed by departmental IT committees responsible for teaching IT (including CAD, graphic packages, networks etc.) is a very narrow and dangerous one. In fact what is accepted as given, i.e. the technological reality forms the very essence of this problematic relationship.

B. Technology from Practice

One of the many reasons leading to this problematic relationship comes from architectural education's link to architectural practice. According to Jeremy Till : 'Education is not only shaped by the pressures of society, but also by the paradigms of the profession itself. In nearly all countries architectural education is regulated by profession... The imposition of professional regulation means that in many ways we are forced to accept and to produce students in support of existing professional requirements be they economic, technical or ideological" [5]

The existing technological basis of architectural profession and the way in which developing technologies are finding uses in the profession form part of the basis of technological teaching within architectural education. The hardware and software which are widely used, the ways in which they are used within the profession for objective and rational problem solving processes find direct reflection within the educational context. While such efforts prepare the students to adapt to the existing professional practice, it also sustains the profession and its existing technological working methods. Once more, the relationship between technology and the profession of architecture is accepted as the given and not questioned. The education then is forced to adapt to maintain this relationship. Thus, not just the technological content of architectural education, but also the understanding of the concept of technology and the way education relates to it, is formed at least partly through the ways in which technology is interpreted and used within the profession.

C. Merits and Demerits of Technology in Education

Technology has many benefits and disadvantages, shifting new ways of learning and teaching in terms of pedagogical improvement.

1). Technology and Instructional Strategies

Despite its efficiencies, it cannot be doubted that technology leads to the dehumanization of education. Any relationships and interactions built through online courses, even if they are very sophisticated, cannot replace face-to-face interaction and real-life experiences. Students experiencing real life lessons requiring engagement in challenging

conversations, development of trust with peers, and accountability in collaborative work are only possible in a face-to-face program.

The purpose of education is not merely transmission of knowledge but also the development of students' experiential knowledge and life skills. In order to achieve these objectives, it is critical that students experience various face-to-face interactions. Moreover, face-to-face interactions are particularly important at the beginning of each course or in the students' first semester so that an instructor can be aware of or detect the needs of students and provide support. Technology can potentially cause more misunderstandings and also take away the nuances of personal interactions.

One can argue that face-to-face courses do not automatically guarantee or promote student-instructor rapport. For instance, some of the university courses have very large class sizes that would make it extremely difficult for the instructor and students to get to know each other. Advocates argue that if technology in education is used properly, taking full advantage of modern communication technologies, such as e-mail, blogging, and social networking, instructors should be able to effectively connect with the students and develop a thriving academic community online.

Another drawback raised is the confusion of the technology usage to enrich the educational experience or to simply increase entertainment value or provide a convenience, which is not always appropriate or necessary (e.g. use of microphone in physical education class).

Teachers' competence is also a major factor that determines the merits and drawbacks of employing technology for education. In order to effectively use technology in an educational setting, teachers must understand why they are using it and must retain ownership of their teaching.

2). Technology as a Communication Tool

Three things that emphasize the merits of using technology as a communication tool, such as e-mail, texting, and social networking in the context of student-professors communication –Convenience, Familiarity, Immediacy. The crux of each argument is that one can easily gain students' attention by employing communication technologies that are a familiar part of students' lives. The main drawback is the increasing availability of professors would hinder students' ability to think independently instead of motivating them to solve problems on their own. The line between spoon-feeding and student's learning has become increasingly vague, largely due to technology. Another demerit is that professors are constantly under pressure to immediately respond to students' e-mail, texts, and phone calls. Use of communication technologies provides instant gratification for students who do not have sound skills in interpersonal communication giving rise to other problems. [6]

III. CONCLUSION

The waves of technological advancement are hitting over architecture education continuously. The relationship of technology to architectural education is more complex than it appears. Without doubt one will have to adapt to existing and future technologies and search for the best way of understanding them when they are presented to us and develop ways of adapting to them.

Architectural education poses an interesting and unique challenge. Not only is the discipline being affected by the emerging information and communication technologies, there remains within the discipline debate regarding what should the objective of architectural education be. Whereas some believe that it should train primarily for creativity so that buildings become works of art. But another school of thought advocates that the "nuts and bolts" of the discipline, that is, how to get a project completed on time and within budget should be the primary objective. The role of technology in architectural education will be developed and influenced by the interactions between these different schools of thought. [8]

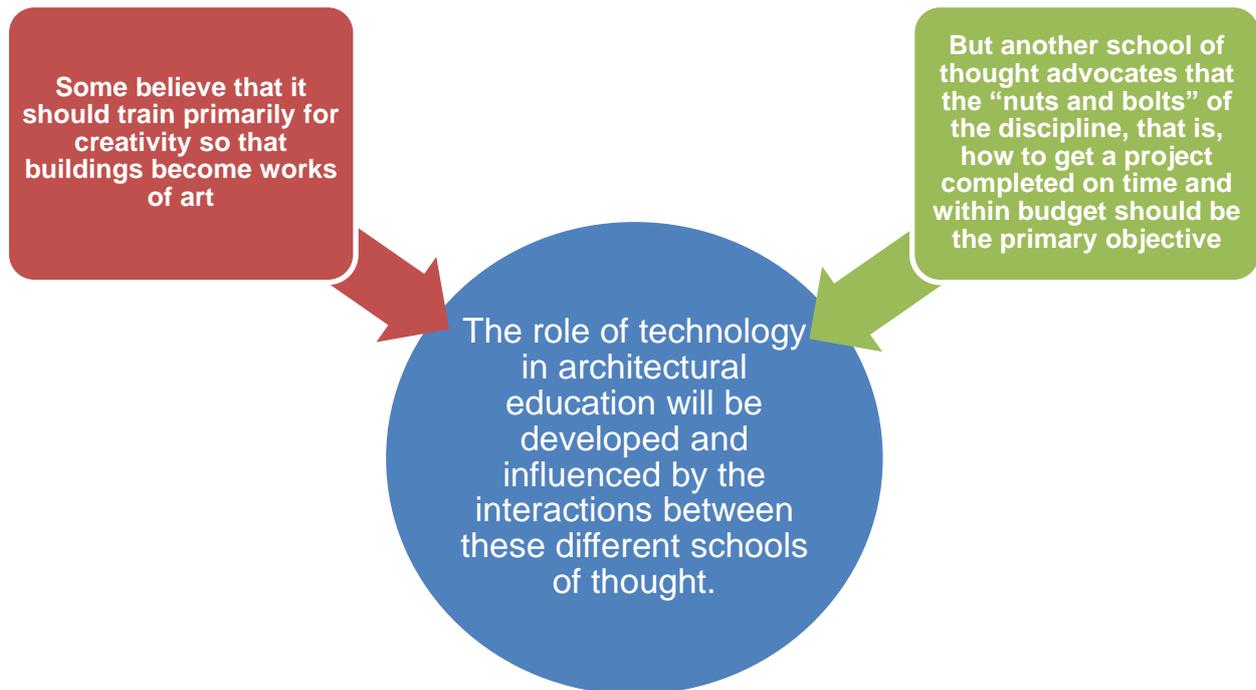


Fig.3. Technology in Architectural Education - An interesting and unique challenge

It is evident that different usages and roles of technology in education have both positive and negative aspects. The two sides are clearly distinguished for organizational purposes. There are however many gray areas because merits and drawbacks are often two sides of the same coin. Thus, their arguments must be understood in context. To understand this context, it must be identified who will use technology, for what purpose, and in which context.

As emerging information and communication technologies expand the dimensions of the classroom, demands that education professionals be familiar with not only their potential but their application increase as well. Because what is required of an individual to be technologically literate is something of a moving target, creating the curriculum in a constantly changing digital environment constitutes the kind of ongoing learning process encouraged by constructivist pedagogy.

Architectural education's current relationship to technology enables a certain type of technology which does not necessarily represent or is concerned with architectural education's pedagogical aims and objectives but with generic common place objectives of rationality, efficiency, accuracy, speed, etc. If that is the case then the problem as well as the solution or improvement does not lie so much in how we use existing technologies or how we teach our students to use them, but in the way we understand our technologies and their evolution and relate to them.

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