Abstract

"Existing models of learning and training are being overturned. Those trainers who stay inside their comfort zones and think in terms of traditional models will be the losers in the profession."

Sloman, Martyn (2001)

The information technology revolution brought new methods of teaching and learning. Using its applications facilitates new learning mediums especially on-line courses or e-learning paradigm. But what is the main impact of this new process on the mental structure of today’s students. They are definitely, more informed and exposed to wealth of channels which helped them to be more creative and critical.

In the domain of architecture, nature of architectural education is based on studio environment where students confront their major design problems. Because of IT developments, a virtual environment can be articulated for students of architecture to allow them to widen their critical and creative perspectives. The architect’s studio is more than a workshop to produce drawings, it’s where designers come together to explore, develop, critique, and share design ideas.

This paper will investigate how digital technologies can influence the teaching of architecture and what will be its impact on both students and instructors and their products. In this paper, I’ll argue that e-learning can substantially help in creating a new paradigm in teaching architecture. It will facilitate the applicability of Virtual Design Studio (VDS) in schools of architecture. This should not be seen as a replacement of the traditional studio but it is a must have facility in today’s schools of architecture.
In addition, I’ll examine the value of applying VDS, in an accelerating globalized world, in promoting a more regional understanding of Developmental issues, challenges and opportunities which faces the Arab community in general and the GCC community in specific.

Key Words: Architectural Education – Virtual Design Studio – Architectural Creativity – Criticism in Architecture - Globalization.
Conference Selected Theme: 3- e-Learning and Traditional Education: Comparative Issues.

First International Conference of the e-Learning.
A New Era In Learning & Culture.
University of Bahrain, Kingdom of Bahrain.
April 17-19, 2006

The Impact of E-Learning on Contemporary Architectural Education: A New Paradigmatic Trend.

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Introduction

E-Learning as a new Paradigm

E-learning will change the way schools and universities teach, the way students learn, and the way businesses keep employees up to date with the skills and information for this fast changing internet economy.

As Sloman (2001) has argued that the pace of change in the global economy and advances in communications technology means that there is no debate about whether e-learning is the future or not. It clearly is. Latest assessments indicate that competitive organizations will soon be delivering up to a fifth of their training through the Internet, intranets or the web.

It is therefore, most likely that over the next decade, the provision of education particularly at the higher end of the spectrum will be heavily reliant on ICT. More seriously, it is obvious that in a knowledge based society, those who ignore internet technology will do so at their peril.

E-learning provides new values which were not available within traditional education process. Affordability, flexibility, accessibility and choice are fundamental assets coming with the virtue of using ICT in education.

As a result of applying e-learning, more facilities in the form of hardware and software should be brought right into the typical academic classroom, or lecture hall in order to make subject matter more understandable.

The Traditional Architectural Education

The education of an architect, is a complex process that encourages students to develop new ways of seeing, thinking and doing in order to become capable and quality-assured designers of the built environment. Most architecture students enter higher education with little experience of architecture as a discipline, and therefore
a large part of architectural education is concerned with the development of new cognitive abilities, values and conceptions.

Knowledge Transfer Process in Architecture
Learning is an act or process of gaining knowledge or skill. The process of transforming knowledge to students is an important objective within the strategy framework of any educational institution.

The discourse on architectural education is dominated by tensions between the need to provide students with a broad liberal education and the vocational need to prepare students well for a professional career. Therefore, architectural education is almost universally project based, with the majority of activity centered on the design studio. By its nature, architectural education is rich, varied and interdisciplinary. In addition, unlike other forms of education, it is primarily based on continuous visual encounter and analysis of precedents from different historical eras and contemporary design solutions.

Another fundamental factor in the process of architectural education is criticism and the role of critics. The quality of the design studio is related to the maturity of the critical environment which is created around and within students and teachers. Channels of criticism are usually fall into four categories; instructors, peer, group, and external reviewers.

The Collective Nature of Architectural Design
The design studio, as physical place and pedagogical method, is the core of architectural education. Ateliers clustered around rue Napoleon in Paris defined the École des Beaux Arts. The Carnegie Endowment report on architectural education, published in 1996, identified a comparably central role for studios in schools today. From programs, schemes, and parti to desk crits, pin-ups, and charrettes—language and behavior learned in the studio establish the profession’s cultural framework.

Architectural design is a complex, collaborative process. Rarely can a designer imagine, develop, and describe a solution to a design problem without interacting and collaborating with numerous other people such as the client, suppliers, other designers, manufacturers, etc. This interaction with others is not only necessary given the complexity of design, but actually shapes the design and influences the development of the final product. Design is inherently collaborative, except in those rare situations where the designer, client, builder are all the same person. The ability to effectively collaborate can result in a design that satisfies the needs of the many people that use the design. Lack of collaboration can result in miscommunication, delays in the design process and an inferior product.

Reffat (2005) addresses the collective nature of architectural design and emphasizes on perceiving virtual design studio as a collaborative architectural education platform. In his view, VDS provides a powerful communication and navigation
environment where users can collaboratively design in centralized or distributed real-time virtual environments.

New Challenges for Contemporary The Educators

Sloman's book (2001) advocates that trainers should rapidly gain an understanding of how e-learning allows the delivery of training in an entirely new way. Learners become interactive clients needing differentiation in services and products, rather than passive customers accepting standard products. They will be able to shop around for training providers, just like any other consumers on the web.

Global education institutions are facing the challenges of incorporating multimedia technologies in the design of modern curriculums. It is a tool to help in the endless process of improving the quality of teaching and enhancing the students learning process.

Computers and architectural Education: Historical Background

"For better or for worse, computing is changing the field of architecture and will continue to do so. I believe that as academics our best role is to seek those changes out or to create them, to challenge them or foster them, and to try to make the inevitable more interesting and productive."

Robert Woodbury, an architecture professor at the University of Adelaide, Australia.

For centuries architects have carried out shape computations by hand, using informal procedures and the simplest of tools. Over the last three decades, however, they have made increasing use of more formal procedures executed by computers, a development that raises challenging questions of architectural theory and perplexing issues for those concerned with the future of architectural education.

Mitchell (1994) was first to declare the concept of Digital Design. He provided a complete conceptual guide to the multidimensional world of computer-aided design. The book was especially valuable to anyone who was ready to expand their work in CAD beyond production drafting systems.

While shuttling between Harvard and MIT on Boston’s MTA Red Line subway during the 1980s, William J. Mitchell, FRAIA, now dean of architecture and urban planning at MIT, mused that the network linking the two schools’ computer systems served as an “electronic Red Line.” By the early 1990s, former students, collaborators, and admirers of Mitchell began establishing trans-continental and transoceanic “Red Lines,” inventing the ground rules for electronically mediated
studios as they went along. From 1995 to 1997, a watershed in VDS evolution occurred in the academy, with publication of experiences in overlapping studios among the universities of Sydney, Tasmania, and Queensland in Australia; University of British Columbia (UBC); Hong Kong (UHK), Kumamoto, and Kyoto universities in Japan; MIT; the National University of Singapore; Washington University in St. Louis; and the Technical University (ETH) of Zurich, among others.

The Electronic Design Studio contains over thirty extensively illustrated contributions that discuss the experiences of universities in the United States, Europe, Japan, Canada, and Australia with computer-aided architectural (CAAD) design, articulate current theoretical and practical concerns, provide criticism of media and methods, and suggest directions for the future. Architectural educators and architects concerned with the effect of computer technology on the design process will find this book an indispensable reference.

However, in the age of technology to focus the debate about the computer's role on skills versus ideas ignores the fact that computers have the potential to change the process of architectural design. Computer-aided design provides architects with a highly effective simulated 3D design environment. This is a significant shift from the two-dimensional process architects have practiced for centuries. The 3D nature of these tools invites the designer to think and act in the third dimension to a greater degree than previously imagined.

As Laiserin (2002) has argued that advances in CAD and visualization, combined with technologies to communicate images, data, and “live” action, now enable virtual dimensions of studio experience. Students no longer need gather at the same time and place to tackle the same design problem. Critics can comment over the network or by e-mail, and distinguished jurors can make virtual visits without being in the same room as the pin-up—if there is a pin-up (or a room).

The Concept of a Virtual Design Studio

“As the hand-rendered communication media of the original ateliers shaped the architecture of the Beaux Arts age, the virtual media of the e-telier will shape a new architecture of the digital age”.

Laiserin, Jerry. (2002)
The architect’s studio is more than a workshop to produce drawings, it’s where designers come together to explore, develop, critique, and share design ideas.

Pioneering schools of architecture, such as the Massachusetts Institute of Technology, the University of British Columbia, and the University of Hong Kong have experimented with worldwide "virtual studios." In these studios, students from around the world team up to design together and work out solutions to communications problems brought on by collaborating across time zones and language differences.

The virtual design studio provides the students with an opportunity to practice their creative thinking skills by sharing their concepts and ideas with a more broad spectrum of students and instructors from different cultural, educational, and even philosophical backgrounds.

To cope with these fundamental changes, the idea of a classroom or studio should be extended from actual reality to virtual reality. Instead of being confined to a physical site, the educational message can be broadcast or telecast over distant areas. In addition, the location of the users becomes irrelevant because the virtual design studio is an electronically distributed workplace (Al-Qawasmi, 2004), and users are able to enter this virtual place by connecting to the WWW.

Communication in a Virtual Environment

Virtual design studios (VDS) have the potential to favor collaboration over competition, diversify student experiences, and redistribute the intellectual resources of architectural education across geographic and socioeconomic divisions. The catch is predicting whether VDS will isolate students from a sense of place and materiality, or if it will provide future architects the tools to reconcile communication environments and physical space.

Architecture student Tom Carajevski at the University of British Columbia presents his design proposal to a critic at Kumamoto University in Japan.
According to Dr. Simoff, (University of Technology Sydney), VDS makes “the location of designers irrelevant … because the workspace of the studio is distributed across the net. Designers are able to enter the studio for interactive and noninteractive sessions connecting to the World Wide Web, multimedia mailers, and/or connecting to a video conferencing session.” Simoff observes that an ideal shared design representation for VDS “would incorporate the designers’ goals, descriptions, reasoning paths in their design steps, partial solutions to the design task, design communications, and information exchange.” But he notes that no CAD system or interoperability scheme among CAD systems currently supports all these data. Therefore, the typical VDS employs an informal hypermedia approach, presenting information as text, tables, images, 3D models, animated images, and Web links to other information.

The cross-cultural nature of VDS promotes questioning “the hundreds of default design decisions that our students make during a semester. People with different backgrounds will do things differently, and it is from that diversity of experiences that the students can learn that every decision in the design process is an opportunity waiting to be used. The virtual design studio also is important as we train our students for a global marketplace.”

The infinity room involves building studios in different locations equipped with floor-to-ceiling rear-projection screens, computers and video equipment to create life-size images. Image courtesy Texas A&M University School of Architecture.

Students can use VDS-specific tools, including “electronic pin-up” programs that allow the same Photoshop image files to be plotted out for real pin-ups and published simultaneously in HTML format for virtual pin-ups on the Web, without duplicate effort.

Conclusions
Introducing virtual design studio (VDS) as a new paradigm in teaching architecture is crucial and valuable in providing unprecedented levels of students’ exposure, knowledge transfer, creativity, and criticism. In addition, due to the unprecedented development in the Arab world and especially in the gulf region, some urban challenges and issues are emerging and should be faced collectively and simultaneously. VDS will facilitate the collective nature of architectural and urban design and provide solutions for regional problem in the developing and Arab world. Therefore, it is fundamental to start experimenting, locally and regionally, with the new teaching environment which is emerging because of the applicability of VDS in Architectural education.

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Related Web Sites

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