COLLABORATIVE “e-DESIGN”

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ABSTRACT

In early 1900’s, successful architects who have a strong influence with not only their ideas on architecture but also their own work gave desk criticism “the form of one-on-one conversation” in their atelier or studio. Being in these studios was a big opportunity for limited number of accepted students. The architectural education in the first half of 1900’s has many other parallels to education from the other professions. Developments in computer technology have been created a new medium in architectural design and education since 1960’s. Today, Computer technology and communication technology together (Information Technology- IT) help architects and students communicate ideas. This is a big opportunity for architecture candidates in 1990’s comparing with the candidates in 1900’s. One of the main changes is desk criticism from “the form of one-on-one conversation” to “the form of multiple consultants”. That means today, not only students but also professionals can develop projects together with any adviser/ partner at any time and at any place where IT can be accessible. Moreover, This collaboration for synchronous – asynchronous studies in virtual environments also brings the equal opportunity to the students from not only developed countries but also developing countries. Students and professionals can share and enhance different ideas, progression of design decisions in educational view and practice view. In this study, some experiences will be shared on design computing and also some new visions/conceptual models of design computing in collaborative environments will be offered.

Keywords

INTRODUCTION

The formal architectural education of candidate professionals requires training in several basic skills including computer applications, collaboration in terms of design quality. The collaborative design of 1990s brings an expert view of how information technology will influence the way of education, opportunity of learning professions and changing ideas in the community. Advances in information technology -particularly working in new media environments and exploring a new ways of design in virtual collaboration (the synchronous and asynchronous nature of networked collaboration) - offer a major challenge to the Schools of Architecture. In the 1990s, Information Technology (IT) brings a strong influences for the way we communicate, the way we do business, the way we learn therefore the way we live. IT collapse time and distance with a new concepts which affect coordination and production and also the kinds of skills required by an employee and the location where work can be done. That is an important affect for training and education too.

COLLABORATIVE VIRTUAL ENVIRONMENTS

The core of the architectural curriculum is the design studious. The collaborative design of 1990s brings new concepts and components to schools, to the architectural design studios (Tokman, 1999):

- Hardware
- Software
- Networks
- Workstations
- Databases
- Meeting/Sharing ideas in Virtual spaces
- Computer labs
- Experts for computer labs
- Academicians knowing IT to “creative” design/ information
- Open -ended ideas to enhance the interests and capabilities for new changes with new medium
- Open –ended ideas to discover the integration of computing

It is known that collaborative environments provide:

- exchange ideas fast among virtual groups
- participation for educational purposes to give students an opportunity to attend/chose different courses in “shared” rooms.
- enable synchronous group working from anywhere
- enable asynchronous group working from anytime and anywhere
- working fast without wasting time for travelling etc.
- an affect for organizational boundaries
- an affect for students /academician’s perception, interests and their thinking and designing skills.

METHODOLOGY

Since 1998, Some architecture students in the department of architecture at the University were asked to design different subjects and different level of mediums (modeling, simulating, rendering, animation). The aim of this research is to computing to improving the process of architectural design and its built environment (the classes/ labs). The research included same students to keep the level of designing capability unchanged. Architecture students’ computer skills were also taken considered while examining the research data.

Design experience:
The subject of design project was given to understand same students with the enchanted architecture ideas by means of sketches and computer modeling. The software which is used allowed students three-dimensional modeling and animating to examine their ideas. The studio was focus on designing different levels of form from easy to manage to complex building to design.

The selected studio works: focus on using materials
Re- Designing the symbol of the university by students:
Z. O.Ozalp, 1999-2000 Autumn term

Collaboration:
Students designed one or more buildings in a semester, using developed computer tools to support the design process and the communication among the participants. They developed conceptual solutions together and presented the whole building in a 3D computer visualization. They used the surface modeler in cases where the model developed in details. This work enchanted the students’ ability to understand how a complicated project to solve of designing a building with use of light, texture, form, function etc. together and how to use computer and communication software. Next year collaborative design projects will be experienced with one university from UK together.

The selected studio works: focus on using surfaces, lights, texture, function and form
Designing an exhibition hall by students:
Questionnaire:

This research was aimed to understand the way of learning activity of computing of architectural design in architectural undergraduate education. The questionnaires were answered by students with a well-background and a well-skilled in architecture as well as computer technology, such as 3D drawing and 3D modeling. Some questions were based on the past experiences of the students in architectural design. Some questions were based on the way of learning of the students. And some questions were based on the student's architectural design process -with computer-aided design applications. The scientific data/results for architectural design show that students prefer computers to design and to communicate with the other people to present / to accept the designing ideas.

A PURPOSED MODEL

After analyzing the students' work and attitude, this model was developed. Figure 1 shows a model system of net-based collaborative environments in architectural education such as virtual design studios. The main goal of the system is a unique system that distributed on the world. That brings academicians and students together with no limit of communication and transmission of both information and knowledge without time and distance. The system includes an intelligent net-based library. The library is supported by a database which contains examples to study and examples to show in courses and design studios. The library can be accessible from any place where there is a network connection. The examples in the library have been supported by expert systems. The system provides international participation access by using videoconferencing. Therefore students can specialize on the subjects which they interested in and can be choose the appropriate courses/ schools without the limit of time and places. (Tokman, 1999).

Figure 1. Collaborative learning environment system (Tokman, 1999)

The suggested model system offer an access for the universities that are in developed countries and developing countries. That access gives students from developing countries equal opportunities to attend courses in developed countries. And the system also offers exchanging ideas, thinking a problem with the entire world and learning each other. Line (drawings and sketches) as a language of an architect is giving a good opportunity to exchange ideas/ to develop ideas between the participants during the design education. As a conceptual approach, This system gives a chance to access a world-distributed database which provides a scientific source (including working materials) for architectural candidates. Therefore the main idea of this model is to add more people participation and information in “shared virtual” places which are existed by IT (Tokman, 1999). The core of participation is communication and computer networks. According to Gero (1998), There are two modes of collaboration design: asynchronous and synchronous. For collaborative design, there are some questions such as “what metaphors should structure interactions in the virtual design studio?” or “how do you
deal with differences in time zones?” or “what should be at home based and what should be in remote locations?”.

We can make more questions such as how architecture/engineer candidates from the entire world can have a more equal educational opportunity to keep the same level of qualifications to meet in IT for collaborative works? Or how undergraduate curriculum can be changed according to today’s advance collaborative environments? Or what kind of system should be established in the universities to give a chance for more voices? It could be needed organizational participatory changes instead of individual academic collaborations. Or after graduation, how can establish an organization to put users and professionals together in “virtual places” so that how the gap between users and designers can be getting smaller?

These are the educational developing part of the collaborative environments: the first half of the whole collaborative environment.

MEETING AT VIRTUAL ENVIRONMENTS AS AN ARCHITECT

The power of design suggestions brings more choices to more different kind of human needs. If the user can join to the collaborative virtual environments easily and without time limit, designers can develop places more responsive to human needs. Mitchell (1998), establishes a new collaborative environment for architectural design studios, which is called (DSOF) Design Studio of Future. DSOF aims to join design studios (architecture and engineers) from universities and from private sectors in virtual environments. The similar approach is developing as a system via computer networks in a post-doctoral study in Anadolu University but the system offer to join with not only users but also municipalities, boards, institutions, special departments within governments to design a project (Tokman, 2000). Figure 2 shows the system that Information Technology is critical enabler to collaborative environments in this study. IT permits the distribution of design knowledge with databases (drawings, examples, images, animations etc.) and the meetings with virtual advisers in synchronies/asynchronies works. In addition, IT gives a possibility to join of the knowledge faster and more easily in collaborative virtual environments. In figure 2, different functional studios, organizations from different places and different times can be join together to design a projects with human needs. Therefore it is clear that in the future, business organizations will exist in virtual environments for collaborative design to connect data via Internet.

The purposed “collaborative design” system will bring together multidisciplinary and international groups of different people who are effected by design in collaborative environments. The basic idea of the system should establish during undergraduate architectural and engineering education curriculums, which are needed updated.

In figure 2, The system of virtual collaborative environment integrates the organizations and professionals to make decisions with communicating users and human needs. In this system needs special developed software, GIS and CAD tools (Tokman, 2000). Today, The software and hardware developments should be used information technology. Near future, the systems should be needed to integration together within the entire world. Three-dimensional designing with the user participation/collaboration within the application of IT has been developing under the post-doctoral research (Tokman, 2000).

Figure 2. A computer network model for the system of data transmission. (Tokman, 2000)
In the system (figure 2), Users and professionals (architects, engineers, and city planners) are interacting in the center of this model. The flow of textual /more graphical information via computer networks from anytime and any places have the important role in the system. The integrated databases are another important component for this model system. These databases describe as “an information bank” which includes information /statistics about population growth and movements, description of regional people and needs; laws; industrial growth; farmland; traffic routes; nature reserve; historic urban pattern and climate and regional characters. This information bank can be updated in digital environments by special departments in governments such as DPT-Devlet Planlama Teşkilatı (Organization of State Planning) in Turkey (Tokman, 2000). The information bank which is offered in this research is also the important data for complex building project for architectural design studio. Therefore the model can be integrated to the architectural curriculum to support an e-"live project" for architectural candidates.

While current virtual architecture fulfills certain needs of online users, a well-designed virtual place is becoming essential to cope with the growing complexity and demand in virtual worlds (Maher, 2000).

This is the second and last half of the collaborative environment.

**CONCLUSION**

Crook (1996) describes two terms of collaboration: optional and flexible.

Crook’s description allow new terms for the participatory design that describe two terms:
- being optional participation,
- being flexible participation in collaborative virtual environments.

The first term means to work individually or to work as a member of a group. The second one means time, aim and whom to work with what qualification. In addition, user collaboration has an important role to make critical decisions for the people not only the healthy users but also users with special needs. These are the new ways of design concepts for not only educational purposes but also professional purposes. Today, IT gives a chance participatory “education and design” to develop new ways of collaborative design thinking for sensitive environment. The new tools and technologies not only change the way we needs but also change the way we
design. Today’s architectural design process requires close and rapid collaboration and teamwork among architects, engineers, users and contractors. In addition, giving equal opportunity for students to learn and for users to join can be possible in collaborative virtual environments. It also brings to attend different courses to specialize for students. These environments bring more voices as a power of corporate participation.

REFERENCES