

# **Design Education Environment on WebPages and Review with SCS and Video Conference**

## **Committee on the Application of Information Technologies in Architectural Education**

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## **Introduction**

In Japan, architectural education has mostly been taking place in engineering departments of universities. This is why schools of architecture are organized in wide variety, from design history to engineering. It is very popular that education for architects and engineers are performed in the same school. The application of multi-media greatly differs in the engineering field and the design education. In this seminar, I as a representative of the committee will introduce the practices in design education.

In design education, CAD and CG have become rapidly popular and developed as means for thinking and communication. They augment conventional method such as drawings and models, and expand the possibility of simulation and virtual experience. According to this situation, the application of digital tools and computer networks generally have been used in design education, and many practices and challenges, including the education only using digital method, can be observed. Furthermore, some of them are examining future stages of education style beyond the boarder of the Campus, such as inter-school collaborative education. Followings are the introduction of practices at the member schools of the committee

## **1. Design education environment on WebPages**

Architectural design is the act of seeking for a goal most suitable to internal and external space conditions of the building, of composing them into form and of expressing it. This process is

generally divided into, a) Programming: Contents of a subject are examined, and the internal and external conditions are analyzed. The goal (design condition) to be achieved is established at the end. b) Finding and creating shape and space. c) Presentation. It does not proceed straightforward, but it is rather a process going back and forth. Many things are required: the ability to analyze, to plan, to express, to think three-dimensionally and synthetically, the sense of spatial and temporal scale which is necessary for evaluation, extensive knowledge of architecture and the sense of color. Practicing design process and educating knowledge are carried out in design education, step by step, mainly through practical projects.

But, in this course of study, the teaching method and contents are not always the same, since they depend on where the emphasis is placed on. Moreover, various solution plans have been born, because plans differ depending on what is considered important. Thus, there would never be only one correct answer.

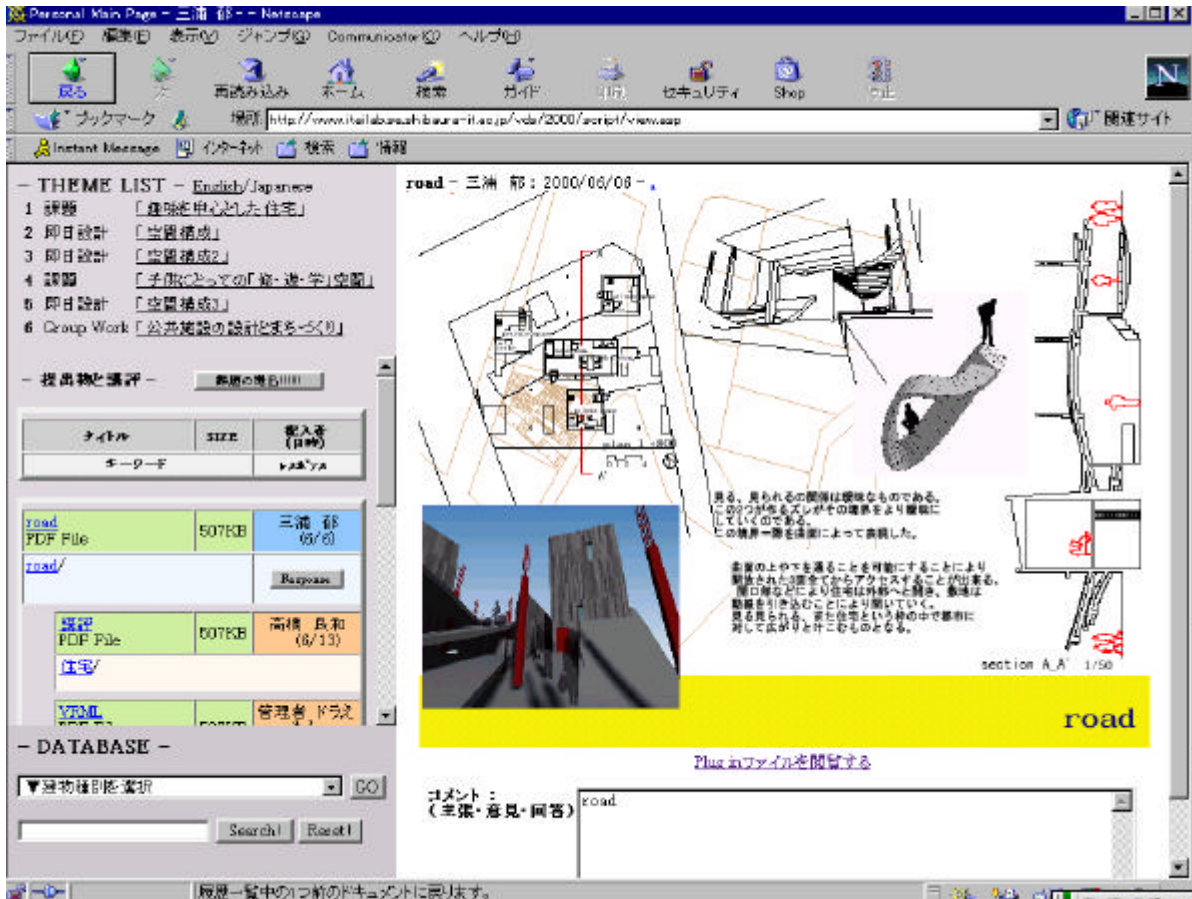
Therefore, the followings are required.

- 1) The collection of project works up till the present year and the records of their designing process as a reference.
- 2) To activate and record the process of esquiss.
- 3) To prepare the works of famous architects which would serve as a clue of thinking and imagination, and many reference materials and their index necessary for design process.

To realize these requirements, supporting systems using computer network have been tried. For example, there is a web site with the pages containing outline and results of every educational project for the past several years. In order to provide a suitable environment for students to support their thinking and imagination, databases of famous architects' works and design methodology, databases of structural system, equipment system and building materials are provided. By providing environment which will enable students to easily present their comments and esquiss on web pages, students can present their design process and accept critics not only from inside a single university but also from several universities, companies and the general public outside. In the meanwhile, students can present their next esquiss to the public. At the end of these interactions, one's personal design history data would be completed. Also, the history of page changes can have an educational effect by reproducing and examining design process or idea.

The following example is the collaboration system of Shibaura Institute of Technology, using MS-ASP (Active Server Pages). Although the databases are still in progress, several remarkable ideas have been shown in history recording and in accessible opinion exchange system.

( URL : [http://www.itailab.se.shibaura-it.ac.jp/vds/2000/vds\\_top.asp](http://www.itailab.se.shibaura-it.ac.jp/vds/2000/vds_top.asp) )



**Figure 1 Composition of WebPages**

Upper Left: Project's Theme List, Center Left: Record of Opinion Exchange and Button to display,  
Lower Left: Database Search Column, Upper Right: Display Frame, Lower Right: Comment Column

There are many other examples of experiments. One of them, which have emphasis on basic design education, has been delivered at Waseda University. It is a class for acquiring design knowledge by analyzing architect's works, and simulating variations. During the process, mailing lists and WebPages are introduced as a media for discussion and information sharing.

(URL: <http://www.cad.arch.waseda.ac.jp/>)

## **2. Inter-school design review**

Distant real time design reviews among universities have been held using communication technology. According to the system used, there are differences in available function and performance of the teleconference, in the number of participants, and in availability. These design reviews can also be held in conventional design education course by using multimedia equipment and computer networks. In this way of design education, both faculties and students can have good stimulation to keep high motivation, and faculties can have an opportunity to self-assess themselves on architectural design education.

### **1) Inter-school design review using SCS (Satellite Conferencing System)**

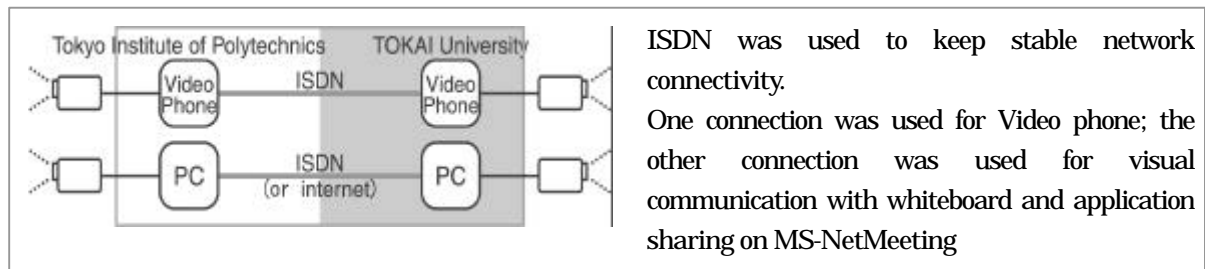
Critics comment on presentations made by students of other schools, and also, on the design education programs. In this case, inter-school design review is aimed not only for multi-critics design review, but also for mutual assessment of educational programs throughout the practice of review from different points of views. In the report on an experimental design review which was held between Hosei University and Kagoshima University last summer, in which they evaluated each other their design educational programs of a semester, they found that the difference in regional environment brought about the difference in the project's subject, such as site conditions, and in criteria of the evaluation. (1999/07) This summer, this design review experiment was held again among four universities at three distant locations.

### **2) Distant design review using video teleconferencing system**

It is our intention to use simple video teleconferencing system in the conventional design studio. Many experimental design reviews between universities have been held with Internet-based or ISDN-based simple video teleconferencing system. It is paradoxical that limitations of quality in audio and video gave students an opportunity to think what is necessary in transmitting design idea. It also gave us an opportunity to investigate new and appropriate manner of transmitting design idea in such a constrained environment. The greater the bandwidth and the greater the number of teleconference system available, the better the quality of review becomes. However, the condition varies depending on the network infrastructure of universities participating and on the subject of the review.

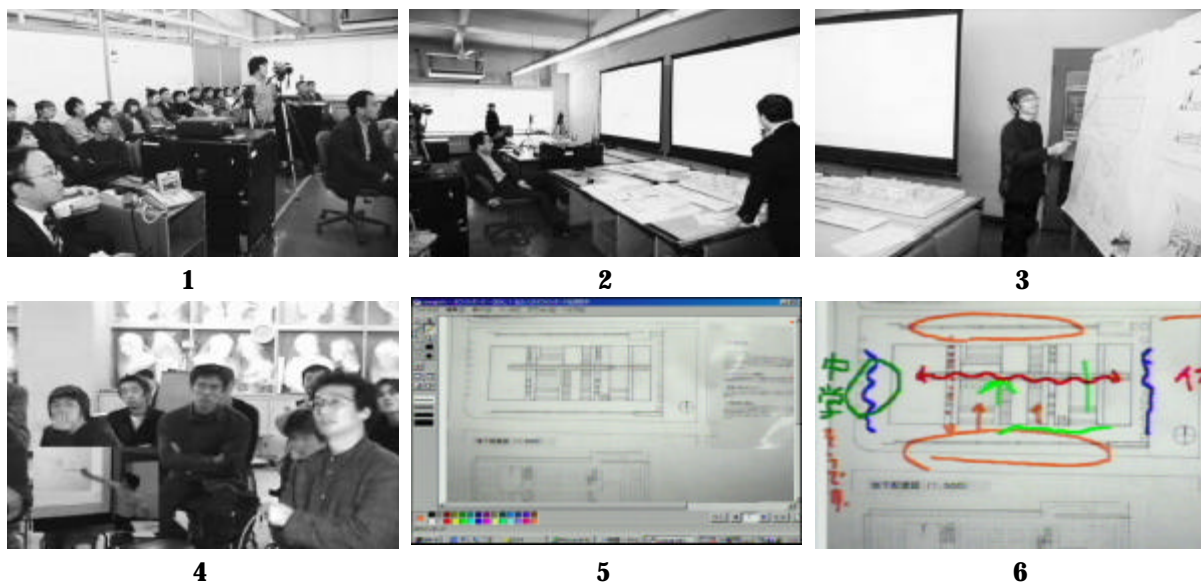
The following examples are two experiments; one is an inter-school design review, and the other is a joint class between Tokyo Institute of Polytechnics and Tokai University. As shown in figure 2, the videophone connected to ISDN circuit was used for transferring voice and video image, and the video teleconference system on PC was used for visual communication by digitized images of drawings and models and by writing on display image.

(URL : <http://www.man.arch.t-kougei.ac.jp/Links/vtrconf.htm> )



**Figure 2 Outline of Experiment**

First, Tokyo Institute of Polytechnics hosted the distant design review of a drawing design project for third year students at the latter semester using ISDN circuit for the video teleconference.



**Picture 1 Records of Distant Design Review**

1: Participants at presenter's site; a videophone, projectors and video cameras can be seen. 2: Screen side of presenter's site, PC for teleconference and a teaching staff at the center. 3: A presenter pointing at the panel, a model on the left table. 4: An image from the commentary's site. The small image at the left corner shows the presenter. 5: An image of a drawing displayed on white board. 6: Hand drawings reflecting the opinion exchange.

Next, Tokai university hosted a joint class experiment using Internet. Three kinds of subjects were introduced by presenting the students' works with PowerPoint. They had questions and answers, and opinion exchanges at each presentation through videophone and Internet-based teleconference.

Although it remains as a future subject, to explain ones work through teleconference on such a constraining environment, it was confirmed that a joint class and a distant design review will be possible by using ISDN circuit and by improving the communication environment. (2000/01)

### **Summary**

These are the various experiments delivered by the member schools of the committee. They are diverse in the focus of education program, intended grade of the students and teaching environment, but basically, the common characteristic of these experiments is "the disclosure and sharing of education contents," and the multi-media environment in education shown here are supporting this aspect.