

LOCAL VALUES
in a
NETWORKED
DESIGN WORLD

ADDED VALUE OF COMPUTER AIDED
ARCHITECTURAL DESIGN

DUP Science

scientific committee

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MECANO - when CAAD meets ICT

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Abstract

For some years ICT (Information and Communication Technology) has been worldwide a hot topic and, especially in the European academic environment, a very fashionable word. No matter where the road would lead to, almost any ICT related project was welcomed as the next step towards a brand new and even better system of education. In the meantime CAAD (Computer Aided Architectural Design) plays a role of utmost importance during a range of stages in the design process or building project.

In this situation a research project is set up to develop an educational environment where CAAD meets ICT. The first application was turned down as the proposed (ICT) technology wasn't available, according to committee judging. After proving them wrong, the second application was more successful.

Even though the project was set up for local values, education in CAAD and related topics in Belgium, it was situated in a networked (internet) world.

After running the project for a period of two years a list of pros and cons can be made up. Moreover, both local and on a global scale, ideas have changed.

INTRODUCTION

At the end of the twentieth century the Flemish Government gently tries to motivate the academic world to switch on to research projects dealing with new ways of looking at education. ICT, Information and Communication Technology, is the new buzz word.

In the architectural world, after years of hesitation, computers are fully accepted to replace the drawing board. In the design office CAAD (Computer Aided Architectural Design) is not only of vital importance during the drawing stages of a project but also gains weight in initial design, visualisation and presentation phases.

To keep education in pace with general practice, we have, within the framework of the European Union Leonardo da Vinci project scheme, the opportunity to send out graduated students to spend six months in a European design office. Being financed with a substantial EU grant, they provide research reports giving an accurate indication of the state of professional activity in the field of architecture and design all over Europe.

mecano

In this motivating context a project is set up to create a brand new educational environment, stretching the limits of ICT to get the best results out of education in CAAD.

In the MECANO project the use of ICT technology never was a goal itself, the new technical potential just created possibilities not available before.

We started looking for a flexible educational environment which could easily deal with students having different levels of personal knowledge and skills. Besides, both students and staff no longer had to be based statically on site at the campus; they could also be working from home or even abroad.

Especially for teaching staff the new environment had to be user-friendly in order to persuade the most cynical specimen of the advantage of converting their courses from the old analogue to a new digital platform.

In order to achieve these noble aims, a high quality, easy to use educational environment based on web technology was created, both for students and teachers. To get the job done within limited time and to prevent reinventing the wheel, the project gratefully used expertise and know-how already available from the Leonardo da Vinci project AVOCAAD (Added Value of Computer Aided Architectural Design).

Technically, MECANO is a (MySQL) database consulted by PHP3-scripts (ODBC compatible). In this way the project is completely independent of any operating system, enabling users to choose the hardware and software they wish.

By creating web-pages using this dynamic method, there is a highly personal approach both for staff and students.

The hand in of assignments is fully automated and progress students make is stored in the database to be consulted at any time.

Even though the project was set up for local values, education in CAAD and related topics in Belgium, it was situated in a networked (intranet and internet) world, introducing and integrating web-based technology into education. This new environment relates more to students than ever before, increasing motivation, creativity and flexibility.

To test the student- and staff interface and the potential the database offers, a number of educational modules were developed.

After running the project for some time we experienced a very positive approach both from students and staff. From every person involved, 55% rated the online educational environment good to very good, 36% thought it to be equal to the existing system while 9% experienced this new way of learning to be worse than before.

One of the surprises was that on average 64% of the students always printed the course content, with an extra 18% doing this regularly, clearly showing there still is an inclination to use data from paper instead of screen.

When on site at the campus students experiencing any difficulty preferred to ask their colleagues or a teacher before they even started to look in the help function.

Next to personal appreciation of students and staff, during the years some ideas have changed, both local and on a global scale.

TECHNICAL INNOVATIONS

database server

In the project definition we intended to have one main server which would run the database. Soon after set off we realised that, by growing popularity of the Internet and large numbers of students using it from campus, the capacity of the leased university lines was not high enough to maintain an acceptable response time. Finally we had no other choice than providing each site with its own MECANO database server. Only to leave us with the problem of having the servers synchronised at all times.

internet connection

In the early days of the project, students working from home mostly connected to an ISP (Internet Service Provider) via telephone line. During the course there was, clearly visible, a change to connection by cable and ADSL (Asymmetric Digital Subscriber Line), enabling high speed data traffic. As the original modules were set up with the lowest connection speed in mind, this created many new opportunities like using moving images or larger 3D-models.

At this moment there still are remarkable geographical differences in internet connection. For instance, within the same Dutch language region of Belgium and The Netherlands, cable and ADSL is far more widespread in Belgium.

new means of communication

The help function quite dramatically changed. Originally there was a direct e-mail link to the tutor with guaranteed response time as well as an on site newsgroup. It never really worked; students just started to send mails asking to communicate on-line using the Microsoft tool Messenger. Those conference calls preferably were at midnight. But it was big fun and everybody learned a lot.

Keep in mind that a change like this probably would not have happened the moment everyone still connected by telephone line.

GEOGRAPHICAL ISSUES

local differences

Even though dealing with students in higher education in the same country, each campus seemed to have its own type of students.

In general, students in for a bachelor degree preferred to have a teacher about. Even with a course especially designed to work on all by themselves and at their own pace, they chose to have their courses introduced in the old-fashioned way; to have them shown how things are done. They also preferred personal contact whereas master-level students where much more investigative and would only ask for help when no other solution was left.

global differences

As a result of different building standards in almost every country you have to take great care when you set up a course intended for students in those countries. Especially modules on CAD-programmes, with many examples of constructional detailing, can suffer badly from this complexity.

global values

The use of Internet, openly integrated into the educational environment, enables students to expand their view. For instance, to dress up their visualisation and without any problem or cost, they can get 3D-models from literally all over the world. Besides, just looking at results of local, national or worldwide visualisation image contests provides a continuous source of inspiration and motivation, lifting the results of some students to a transcendent altitude.

THE FUTURE

In spite of all the excitement about ICT, even at this moment most of it is only restricted to words. There still are very few working educational models. Those which do function, such as MECANO, prove that ICT by no means is the end of the traditional educational model we have known for centuries.

The role of CAAD in architecture has been established as never before. However, there is a tendency within the design office to shift from just drawing lines to using object oriented elements with embedded intelligence to make up architectural plans.

Presentation and visualisation techniques come up stronger and stronger, offering a clear alternative to present a complex three dimensional design in a comprehensible way to any person unknown in building matters.

On the whole, the networked design world offers many new and exiting possibilities and challenges to both student and professional user. But no matter how exciting it all may get, whether you are connected by copper wire or glass fibre, use the latest state of the art equipment or a ten year old pc, never forget that in the end it all starts and ends with the enthusiasm of the person behind the screen, the personal touch of staff implementing the application and students using it. Exciting local values or high tech global networks, always remember that basically it all is about people, people like you and people like me.

Notes and references

1. MECANO Modules voor Educatie in Computertechnieken voor Architectuur met behulp van Nieuwe Onderwijstechnologie -- Modules for Education in Computertechniques for Architecture using New educatiOnal technology.
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MECANO website <<http://www.mecano.eu.org/>> [31.1.2003]