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**Computer Assisted Presentations,  
on-line Exercises  
and Internet Databases  
for Construction Teaching**

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Present day difficulties in construction teaching at the university may be faced combining old and new techniques such as conventional lectures, exercises on-line and Internet oriented databases. Some experiences developed in Barcelona for students and architects suggest a method based on the three aforementioned techniques:

1. *Conventional lectures* devoted mainly to theory, principles, ideas, fundamentals and all concepts that can only be taught at the university and professionals will never learn. They refer to the knowledge needed to formulate the problems, look for solutions and verify them. Lectures are nowadays supported on Microsoft PowerPoint presentations or the like. Several warnings have to be kept in mind:

- Do not project and read the same text.
- The background may interfere with the text. Be careful using photographs as background.
- Refrain from using dynamic features. Words flying from outside and letters built from points annoy the audience.
- Stand up and move around. Seating in front of the computer and monotonous speaking promotes sleeping classrooms.

2. *Exercises on-line*. More detailed transmission of knowledge is now possible through the Internet. Two courses on-line were designed and tested to teach design of structural reinforced concrete members to professionals. The following conclusions can be deduced from the results:

- On-line education is based on the individual relations between the professor and the student through the net.
- The time-table can be adapted to the possibilities of the student.
- The teacher follows directly each student.
- Much more dedication is needed. Cost of production is very high.
- The participation of the student who does not abandon the course is practically total.
- The communication increases substantially. Feeling that others are not listening inhibits timidity and shame.
- Everything is recorded. Comprehensive evaluations are possible.
- The transmission of practical knowledge and exercises is much more effective than the transmission of theory and ideas. That's why on-line for practical purposes is recommended here.
- Repeated questions are stored in the FAQs section.
- Dialogue is possible through the Forum section.

(Courses on-line of the "Escola Sert" where these experiences were done may be visited at: <http://www.coac.net/escolasert>).

3. *Internet databases*. It is necessary to filter and orient the huge amount of information available in the Internet concerning to every topic. For that purpose, recommended links and specialised databases can be provided:

- «Textile Construction & Tensile Structures. Joints, connections, fittings and anchors database ». To teach textile roofs and tensile structures a database

has been provided at: <http://www.upc.edu/ca1/cat/recerca/tensilestruc/portada.html>. It includes typology, details, references and links. Started by the teaching staff, it is now fed by the students as a part of their contribution to the course.

- <http://www.e-coac.org/sai/inter/> is a searcher based on Internet web sites that provide useful information to architectural design. Visiting them technical data and explanations are found because the addresses are filtered by the Architects' Association.

## Conclusions

A practical way to deal with increasing university constraints, complexity of knowledge and new techniques consists on mixing computer assisted presentations, on-line exercises and education oriented databases. The presentations assume the role of conventional lectures aimed to theory, principles, fundamentals, ideas and concepts, while teaching on-line is more effective for practical issues and updated information can be provided through the Internet. All of them need important alterations of previous texts and material. Consequently, the answers to the questions of the call for the Fourth EAAE-ENHSA Construction Teachers Sub-network Workshop are:

*What tools and vehicles will be employed in the new construction teaching?*

Computer assisted conventional presentations, on line exercises and education oriented databases.

*How will new information on innovation, new materials and construction methods become known to construction teachers?*

Teachers are professionals involved in building construction.

*How could this information be taught and disseminated to students?*

Through conventional lectures, on-line exercises, websites and databases.

*What are the necessary initiatives our Network should take towards strengthening this new form of information exchange and towards enriching and improving the process of teaching?*

"THE EUROPEAN BASED NETWORK FOR TEACHING CONSTRUCTION IN ARCHITECTURAL EDUCATION": [www.teachingconstruction.com](http://www.teachingconstruction.com)

(Database of documentation, images, links, on-line exercises, computer assisted presentations, news and events)

## Bibliography

- J. Llorens, 2003: "Enseñanza on-line: del menú a la carta" in "XI Congreso universitario de innovación educativa en las enseñanzas técnicas". "Escuela Universitaria Politécnica", Vilanova i la Geltrú.

