Modular E-Learning-Environment for Architecture

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Abstract. IMLAB (Interdisciplinary Modular Learning System for Architecture and Building Science) is a project, startet by three schools of architecture in Germany: a modular, digital and online-based system, which has the aim to collect and improve teaching elements from architectural schools around the world. The development of digital teaching materials at every single university is very expensive - so the idea is to motivate schools all over the world to contribute their teaching materials and teaching moduls. It could work like an architectural "napster". The initial development of this kind of teaching community was funded by the German Federal Ministry of Research as a research project. The momentary state of work is documented on the following website: www.imlab.de. Unfortunately all the information is in German up to now - we will develop the english version as soon as possible. We do have interactive workshops and design-projects beetween different universities up to now (in Germany) and several contacts to international partners. We would like to use eCAADe 2003 as a platform for multiplying this idea and finding more partners from all over the World.

Keywords. e-learning, modular, synchronous, asynchronous, knowledge-base

Introduction

In the year 2000 the German Federal Ministry of Research started a comprehensive program to support the integration of New Media into the learning and teaching process in higher- and further education. IMLAB (Interdisciplinary Modular Learning System for Architecture and Building Science) is one of a hundred projects which are funded because of their innovative character in the field of structural changes in architectural education. The recent development in the information society demands a fast way to knowledge and strategies on how to use this knowledge. So teaching and learning nowadays can not mean reproducing knowledge, but understanding how knowledge is produced. Teaching must call attention to the variety of theoretical models and students should get an insight into the building up of knowledge and its dependency on cultural and temporal changes. The computer will be the central medium for this process of knowledgebuilding and therefore it must be the central medium for the university of the future. It will serve as a learning station, an information agent, a knowledgebase and a communication centre. IMLAB takes this situation as a challenge and as a possibility to participate on important structural changes in the field of education.

Idea and Concept

The project started in June 2001 and will be funded until June 2003. During this time this cooperation-project of three schools for architecture focusses mainly on the development of innovative concepts for architectual studies and new media. Therefore IMLAB follows two basic approaches:

First of all it develops a virtual knowledge-base with materials in the field of architectual studies. This knowledge-base includes a variety of digital edited learning objects that can be used by teachers, academics and instructors for their teaching and training. Learning objects can be understood as small, self-contained units like a streaming video, a bunch of pictures ore a simulation system. But it could also be a modul on a certain subject, small enough to be integrated by teachers and trainers into their individually organised teaching processes, either in virtual seminars or traditional classroom teaching.

The knowledge-base can be also used by students. This will contribute to a more self-controlled learning. Part of this concept is to build a community of teachers and trainers in architectual studies that are interested in delivering content for this knowledgebase and in participating in the valuation process of the learning objects. Though it is very expensive to develop digital learning and teaching material at every single university, IMLAB wants to collect and improve materials from architectural schools and experts all over the world. It could work like an architectural "napster", as Bob Martens said. Complementary IMLAB develops learning modules which are tested in classroom and online teaching.

The second approach involves the learners interests and the present demands on new ways of learning and teaching and of synchronous and asynchronous communication- and information-processes. As a supplementation to traditional classroom teaching, IMLAB evokes communication-processes between students and teachers/coaches, students among themselves as well as cooperation with students from different universities through an online platform. This cooperation happens outside of the traditional classroom and offers possibilities to break up the teacher oriented learning process. Students can also exchange ideas with other students and with their teachers, independently of time and space. This approach offers the possibility to research and evaluate new learning and teaching strategies with New Media.

Development

The early phase of the project included an intense research of computer technology (especially communication and learning systems) and specialised knowledge in the field of architectural studies. The latter was selected, rated, described and put into a database. The different technological approaches in the field of online-communication-technologies like video-conferencing, application-sharing, "computer supported cooperative working tools" (CSCW) were tested and documented.

The next step was the integration of these elements into a first collaboration project of the three initial schools of architecture. Material from the knowledge-base was used to build online modules for the seminar "Light in Architecture" and the cooperative design-workshop on this subject was realised in an online-forum. The evaluation of this project showed different weak points that were improved in a next step and for the second cooperative project "Building at a Waterfront". This project is now running on a learning-platform (Web-CT) and takes into consideration the various methods of motivation and new didactical models of online teaching and learning.

Conclusion

For the next step we are planing to go further into researching and testing these learning and teaching processes and would be happy to find international partners for cooperative and collaborative projects as well as many partners and experts who would like to contribute material and teaching elements to the knowledge-base.

There are already some projects, which have similar aims to establish a network of cooperation: "winds-university", a project among european universities, funded by the fufth european framework, Dynamo in Belgium or netzentwurf.de in Germany. They have different fields of interest -

but one idea in common: to reach a new level of quality in using digital media in architectural education.

Basic Design	Architectural History	Descr. Geometry	Construction	Design	HVAC	etc.
	CD-ROM		Expert (E)	Video		Books
Expert (E)	VRML		Books	Photos	TV	Books
Coach (C)	Books	CD-ROM	Photos	Expert (E)		CD-ROM
Books	Photos	Coach (C)	CD-ROM	Books	Expert !	Photos
	Books	VRML	Coach (C)	Coach (C)	Photos	
	Expert (E)					

Table 2. Types of media and methods in respect of curriculum

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http://www.imlab.de
IMLAB - Intersisciplinary Modular Learning System for Architecture and Building Science (FH Bochum University of Appl. Sciences, HS Wismar, HS Anhalt, Germany)

http://www.winds-university.org
WINDS means "webbased intelligent design tutoring system"

http://dynamo.esro.kuleuven.be
DYNAMO "Dynamic Architectural Memory Online" (KU Leuven, Belgium)