

Cyber Design Lab: A Work Platform for Collaboration and Learning

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Introduction

An example of work platform realisation for collaboration and learning through the net. This work shows experience during realisation of online platform model for asynchrony online collaboration professors and students at the Mechanical Engineering Faculty in Slavonski Brod – Dept. for Mechanical Engineering Design (DMED).

Online work platform for collaboration and learning Cyber Design Lab contents information, documents and references which are useful for students and makes possible asynchrony communication of students and professors, learning from incorporated or exterior resources with knowledge testing, assistance of professors and active participation of students in construction of internal resources (construction of learning and knowledge base in collaboration). Students can participate in the public or internal online publishing and they can publish their own professional papers.

Use of an online platform is much cheaper and simply, owing to the automated online tools for collaboration, communication and publishing. User needs only connection on Internet and which ever Internet browser.

The online platform Cyber Design Lab is using Workspace system, the online platform for collaboration and assistance which is developed as a result of experiment made by a group of authors from SB OnLine community in Slavonski Brod. System is modular and scaleable, applicable on Internet or in local net – Intranet, and it is effective solution before implementing complex (and much expensive) solutions in the future.

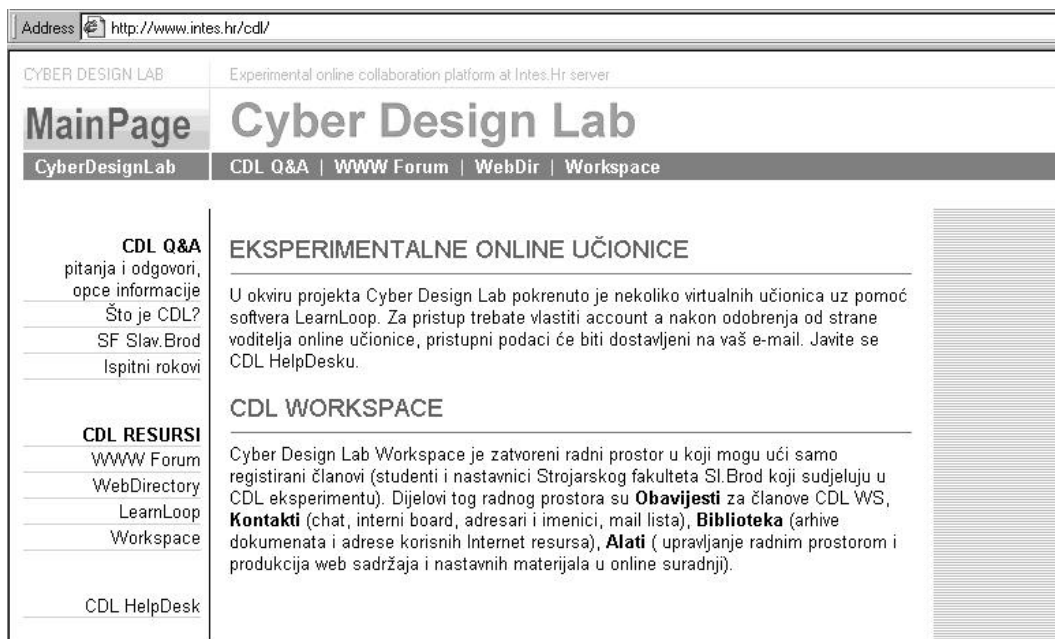


Figure 1. The main page of the Cyber Design Lab

Purpose

The Cyber Design Lab Project has been created as a private project to usher in a new era of distance learning. For many years, most distance education has focused on one- or two-way communications through video and television. Emerging technologies have opened up other avenues for distance learning delivery. This project focuses on using communication through computers as a vehicle for student and professor interaction. In the first stage it will be only for students and professors at the Faculty of Mechanical Engineering in Slavonski Brod (from DMED). As we know it is a pioneer project in Croatia

and its goal is to increase access to student basic learning services. The objective is to help lay the groundwork for a Croatian student basic education distance learning infrastructure.

Tasks and Activities

These are CDLP's major tasks and activities:

- build and promote a distance learning knowledge base
- provide technical assistance in implementing distance learning
- online professional training in using distance learning
- utilize distance learning pioneers
- expand and enhance the interactive learning resources
- pilot test home learning and tests via Internet
- using distance learning for workforce education
- distribute instructional CDs

Realization of CDL Web Site

Experimental platform is presented on the www.Intes.Hr server (Fig. 1) and contains the following parts:

a) **Public visible part**

There is access to these contents on the Internet with no need for authorisation, therefore publication and administration of those contents could be done through the CDL Workspace. Many collaborators are involved in arrangement of this contents (e.g. assistants, students,...). There are the following contents:

- **Question & Answers (Q&A)** (*This contents contains information about CDL project, about faculty and department, about exams etc. This contents are powered by the online tools inside of the CDL Workspace.*)
- **CDL WWW Board** (*This is a public forum, discussions etc. This forum is creating by online administratory tool from the CDL Workspace.*)
- **CDL Web Directory** (*This is address book of useful Internet resources. These structure and contents are maintained by tools from the CDL Workspace.*)

b) **Closed, working part**

The main purpose of this part is for the practical experimental researches and for the work during the CDL project, and it is closed for the public use. The users have to sign in via the CDL Help Desk programme. There are the following two contents:

- **LearnLoop** (*Experimental online workshops with experiment and research possibilities are realised by the LearnLoop software. Administrator creates courses and defines a mentor, mentor selects its assistants – collaborators and working together they prepare Case, Quiz, Calendar and other parts of course. As students sign in and with their enrolment granted, they have their workspace, they communicate via e-mail system or by the internal WWW Board, they can work on their tasks, and also they can actively participate in development of course. Quiz could be appropriate as an estimation of task mastering.*)
- **CDL Workspace** (*This online platform realises a closed space of services and communications for registered users only – professors, assistants, students etc. Users are categorised as: administrator, editor, author, guest and they can use some online services and tools of subspace inside of workspace. Internal communication based on professor – student relation, including creation of that internal contents is the goal of this workspace. The CDL Workspace working platform has several subspaces:*
 - *basic manuals for work and announces*
 - *communications (WWW Board, JavaChat, mail lists, address books)*
 - *library (folders of documents arranged by its topics with catalogue, and also with possibility to upload documents like MS Office Document, PDF, image, ZIP etc.)*
 - *Tools (tools for administration and maintenance of Workspace, tools for publishing etc.)*

The Project Team

The SBNet & InteS from Slavonski Brod are sponsors of this project. They manage the project and web site. In the project team are authors with their assistants. The demo results can be seen on the web site www.intes.hr/cdl. The creation, compilation, and maintenance of this web site is funded in whole or in

part by the SBNet & InteS. However, the opinions expressed do not necessarily represent the position or policy of the Faculty of Mechanical Engineering in Slavonski Brod.

Creating Online Courses

Demand for online courses is growing rapidly. Many high schools and community colleges in USA for example, following universities' leads, are expanding into distance learning. Major research universities are creating online graduate programs and are offering more and more of their existing courses online. Universities recognize that even traditional campus-resident students sometimes prefer online courses in order to resolve schedule conflicts or take popular courses when physical space limits enrolment¹. Finally, the growing population of post-college learners creates a market for courses delivered online because rapid economic and technological changes create a need for life-long learning, more people have two or more careers in a lifetime, and workers and employers need just-in-time learning.

When creating an online course, there are certain key decisions to be made at the outset. Those decisions - crucial for anyone considering an online course, or even adding online content to a traditional course - can be summarized by three questions:

- 1) What are the reasons for creating an online course?
- 2) Do these reasons justify the extra work?
- 3) Once we decide to offer an online course, should we package it in a "turn-key" commercial system like BlackBoard, WebCT or LearnLoop, or do it yourself with Web-creation software such as NetObjects Fusion, DreamWeaver, or FrontPage?

Reasons to Create an Online Course

The primary reason for creating an online course is to provide access. Professionals who want to learn more in their field, for example, may have difficulty going back to school or even taking night classes. Engineers in abroad who need maintenance engineering courses, professors who want formal course work in their subject, and students at home who want formal or additional courses - they all need these courses provided someplace other than a traditional academic setting. Likewise, high school or college students can take courses online that are not available at their own faculties. Home schooling, growing rapidly as an alternative to public schools, can also benefit from the educational richness of online courses.

But online courses provide more than just access. Good online courses offer a quality of instruction that cannot be matched by face-to-face instruction. Online instruction can incorporate a broader range of information, integrating course content with the informational resources of the Web. Students can interact and work together in ways that are not possible or practical in face-to-face education (Collison, Elbaum, Haavind & Tinker, 2000). Space and time barriers to collaborative work on plans, projects, reports, and other learning tasks are removed. Virtual field trips to museums, historical sites, foreign countries, and the like already create learning opportunities that are not otherwise practical. The day is coming when such trips will be expanded to university research labs, corporate business offices, government agencies, and expeditions into remote parts of the world.

Justifying the Extra Work

Online courses present a few immediate and often time-consuming challenges. First, they require a lot of technical support. It is essential to have a Web server and a webmaster, and useful to have help from instructional designers. Second, online courses require a good deal of time using e-mail and electronic conferencing with students. Third, online courses frequently require the instructor to re-think some basic concepts, including how he or she approaches teaching. This is especially true for professors accustomed to the lecture mode, because online teaching does not readily support lecturing. Even with streaming audio and video, online lectures are invariably less stimulating than face-to-face ones. Finally, online courses have to be marketed well in order to be effective. Competition among online courses is fierce, technology fees mean that online courses often cost more, and there is no complete national registry for online courses.

Despite these challenges, the benefits of an online course outweigh the time consumed creating it. Two benefits have already been named: increased access and the potential for improved quality of instruction. A third is perhaps the most important. Moving to online teaching forces critical reflection on teaching philosophy and goals, which improves the effectiveness of teaching - online or not. Online

¹ About 50 students - all of them immediately switched to the online section.

teaching also presents new opportunities for learning activities. Group co-operative learning, for example, is easier online, because asynchronous meetings eliminate schedule conflicts. Even synchronous meetings are easier online because space and distance barriers are removed.

Designing and Packaging the Course

Initial Considerations

When designing an online course, you'll need to consider the following:

How to revise existing learning activities to make them suitable for online delivery, or how to create new ones? Online courses benefit from such learning activities as topic dialogue, group-based decision making, case studies, reports, and "Web Quests" (systematic searches of Web sites to solve a problem or develop a cohesive information base).

How to administer examinations? Exams may need to be proctored by third parties. A greater percentage of the final grade may be based on the learning activities described above rather than on exams.

How to handle electronic interactions? Typical e-mail discussions not only generate too much mail but also lead to superficial opinion exchanges (Collison, Elbaum, Haavind & Tinker, 2000). We find it more satisfying to use asynchronous computer conferencing with a focus on teamwork and academic deliverables. Groups need constructive activities that generate a product, such as a group decision, plan, project, report, or case study (Klemm, 1998 a-c). In an asynchronous electronic conference, students can post messages and work on group projects when it is most convenient for them. Materials are always available for annotation and update.

How to provide information using methods other than lectures? Simply putting lecture notes on a Web site is not enough. Online tutorials and slide shows help, as do textbooks, articles, and links to Web sites. Compulsive lecturers may broadcast lectures via streaming audio and video, but why bother when the Web opens the opportunity for more active and student-centred learning?

What to put on the home page? The home page should contain what you'd provide on the first day of a traditional class: links to course objectives, course organization (what topics will be covered when), grading standards, and contact information (the professor's e-mail and phone number, as well as a link to his or her personal Web site). You might also include a site map and a search field. Casual viewers should have free access to this page, but you can restrict access to the rest of the site by requiring an ID and password.

Choosing Software

Once these design issues are addressed, the next step is to decide how to deliver the course. The easiest way to get a course online is to use a commercial course management system (CMS), such as WebCT, BlackBoard, First Class, or Top Class, or one of free systems such as LearnLoop.

Automated registration and grade books

Most CMSs allow students to register for courses online and to be entered automatically in a grading spreadsheet. Our webmaster created an HTML form for online registration; the information can be downloaded into an Excel spreadsheet for grading. Other registration functions (fee payment, grade records, etc.) are handled in the old fashioned way, at the registrar's office for example.

Scheduling calendars

It could be used very good scheduling software through Palm Pilot and GroupWise. For a Web course, it could be easily created an HTML course calendar in WordPerfect (but apparently not Word).

E-mail support

Students and professors could use the public e-mail system, as do professors and students at most institutions.

Bulletin-board discussion forums

We have found It could be popular feature of CMSs limiting. Such "threaded" topic discussions consist of separate e-mail messages, which do not convert easily to academic deliverables. For the planed course, it have to use a program that uses hypertext as the organizing principle. Students can write "in the margins" with in-context pop-up notes and links to other documents, and can insert text and graphics on the same

shared pages. This is more advanced than using e-mail software that can send HTML links. You don't attach notes to other notes; you attach notes to specific places within a note. Users can create "community documents" in which a student group can jointly edit and make annotations directly on the document itself (Klemm, 1998c).

A good online course has good content. The CMS wrapper doesn't provide this - the course author does. Authors also add learning aids with such features as automated self-study quizzes, crossword puzzles, slide shows, case study programs, intelligent-agent "boots", computer simulations, and computer conferencing environments. Too many online courses are casually generated without such features. The resources to create good Web pages make a CMS unnecessary - and professors without the resources should perhaps not offer online courses.

Getting started

The most important thing about getting started is to get started early. Because we are starting from the ground up, it will take even longer. Most of the time and effort goes to content and learning activities. There are many useful interactive devices that you can put in your pages, using JAVA script code that others have written (Ford, 1998; Flanagan, 1998; Goodman & Eich, 1998; Negrino & Smith, 1999).

Conclusion

Our experiences with CDL Workspace and online courses have taught us the following:

- *Any time contact without hurry.* The users (students, assistants, professors etc.) have a privilege to realize connection to non-stop opened Workspace info from any input point by the Internet, so it make professor – student connection enable at any time and from any place without hurry.
- *No need expensive software to use Workspace.* To use the Workspace the user needs nothing more than the Internet connection, any kind of Internet browser and Workspace registration (no need for a special software – keep it cheap and regular).
- *Getting cheaper distribution of lectures materials.* Students, assistants and teachers can store all sorts of documents and information in the archives so they can be used by others (e.g. copies of a rare book, exchange of notes from the lectures by students, exercise and work sheets that might be out of stock etc.).
- *Have a good reason to build an online course.* For our first online course, we did not identify a market, nor did we have a good way to inform people about the course, so our enrolment suffered.
- *Convert an existing course rather than create a new one.* Creating new subject matter while building an online course can be overwhelming.
- *Initiate the effort well in advance of "delivery" date.* It will took a year to get our course online, and we are still making improvements.
- *Change your teaching style and philosophy.* The unexpected advantage of the online environment is that it weans us away from traditional lectures into the more satisfying world of instructional management. Now our goal is not to transmit information from our notes to student notes, but to help students find, digest, assimilate, and apply knowledge.
- *Use content other than that at your Web site.* Too many online instructors think that all course content has to be on their course's Web site. Not so. You do not have to provide all the content (textbooks were not made obsolete by the Web). Internet courses are readily enriched by linking to other Web sites and to electronic libraries. Even with hard copy magazine and journal articles, the old-fashioned Xerox approach is still useful. For example, we saved ourselves a lot of time and effort by mailing paper copies of published readings (many journals have liberal permission policies for educational uses).
- *Focus on content and learning activities, not technical frills.* The time which have to be spent on graphics and features such as grade books reduced the amount of time available for content and learning activities.
- *Enforce deadlines.* Students who procrastinate impair group work. To address this problem, it have to set rigid deadlines for every major activity.
- *Put the burden of communication on students.* We suggest team activities and assignments to open discussion forums because team activities encourage more - and better - participation. In those teams, the burden of communication is on the students. Professor only monitors the process. He does not allow "lurking", where students do no more than read the commentary of others. Part of the final grade includes peer assessment of each student's contribution to the team effort.

- *Automate*. Automated electronic grade books are helpful if you have a huge class. Another device we find useful is automated feedback on assignments. Our students reply via e-mail to open-ended questions on their reading assignments.

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