

## **Continuous Learning Relaxing Time & Location Constraints In a Regular Curricula Degree Offered by University of Milan**

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**Abstract** This paper presents an on going experiment on augmented learning combining web-based course management to traditional classroom teaching. Proficiency grading of students' results at a much earlier time compared with traditional courses. The findings reported relate to the Curriculum on *Comunicazione digitale* Degree at the University of Milan. It applies to regular students whose study does not depend on the ability to attend classroom regularly, but on receiving benefit from continuous availability of learning material on a website where students find a complete learning environment including syllabus, timetable of assignments, students projects, bibliography, research papers, and all study material students and professors consider useful for a better cover of each course program. Website access is supplemented by videoconferencing on IP to supplement study either guided by tutors or by cooperative seminars among students focused on written examination tests and projects' outcomes. This on-going experiment within the course on Information systems is obtaining a great return in terms of attending students and collected consents. Moreover, this web-based course management exploits the learning object concepts and is developed according to SCORM standard and requirements of European Community for universal access to public Web resources, both for usual users and for those bearing handicaps. Course-specific quality assessment processes are implemented through flexible on-line evaluation forms covering subject matters taught.

### **Introduction**

Teaching in a traditional educational environment requires synchronisation of timing and identity of location for both teacher and students, and the necessity of an official classroom timetable. The "CLINIC: Continuous LearnINg relaxINg time & location Constraint" project aims to relax both time and location constraints depending upon students' needs by using WEB facilities. The result is an effective methodology for an "education process control" experiment prototyped in the last four Academic Years within the "Digital Communication" Degree at the University of Milano, which is now expanding its use in other curricula.

First results of CLINIC deployment show good acceptance from students and reasonable achievement of the main four project objectives:

- a) Take advantage of Internet and Web technology to break the bounds of same-time & same-location delivery of educational services within traditional educational environments.
- b) Assess quantifiable benefits in students' proficiency arising from web-centric study support in a curricula.
- c) Experiment Open Distance Learning in professional education related to work practices.

The CLINIC project provides a web-based study support broken into daily information on courseware related to courses a student attends. It is designed to help those who are not able to attend regularly classrooms because stable employees or simply missing a lecture for whatever reason. The project's starting point is pictured by a few teaching website developed without any co-ordination by single professors to provide classroom documentation to their students. CLINIC implements the process where students and professors co-operate in feeding the syllabus of their course with notes related to each lesson content; publish the visual aids used in classrooms; and clarify issues by emails for personalised students' specific explanations. Moreover assignments and grading criteria are made visible to students much earlier than usually as part of an experimental evaluation of the entire teaching process made transparent to both players in academic education.

The long-term goal of the CLINIC project is to address web-based training across Europe as a means to get students better prepared to a working experience through stages offered in a company in another European

Country and the development of ad-hoc pre-stage distance educational resources. The rationale of this approach is to impact on the present situation of high young graduates' unemployment through Europe. For this purpose CLINIC is going to promote summer stages among students, individuals and companies/institutions in order to bridge education in classrooms with the know-how required in working practice in Summer 2004. Offers of stages need to specify a profile of the skills required and the requests for stages need to specify related individual competence record. Best fitting matches of stages to stages will be performed on this basis.

### **WEB-CENTRIC Experiment in the Digital Communication Curricula**

The web-centric teaching support offered within the Digital Communication Curricula at the University of Milan is available at <http://webcen.usr.dsi.unimi.it/>. The web-site refers also to other four Curricula in the Informatics area offered in the Academic Year 2003/04, while courseware of the Academic Years 2003/02, 2002/01 and 2000/01 is still accessible as an archive. The language used so far is Italian since students are Italian. Its use requires very basic computer science skills: a web browser and knowing how to access web pages.

CLINIC project originated from findings showing a lower number of students attending classrooms after programming skills were acquired in programming courses, due mainly to students' part-time working activities which eventually resulted in full-time employment or start-up companies. These findings were discussed in the 1999/2000 Human Computer Interaction Course, which brought to this *webcen* approach as a way to share courseware on the web by the students under Professors supervision. This approach is highly interactive and errors are obvious, while each courseware grows from lecture to lecture; each mistake itself becoming a teaching aid if not detected by students. The obvious target is to have all mistakes cleared by the end of the course.

Students meanwhile identified additional services: timely availability of written texts; results of intermediary tests and students' handouts; bibliographic references; evaluation forms of student satisfaction as "the customer"; discussion forums, and so on depending upon information each Professor thought useful to provide including links to other useful web sites. Through *webcen* Professors are able to timely integrate the program of their courses and make them available much earlier to potential students, while students missing a lecture or never attending because working far away, are able to follow each course in progress and to take their examination earlier.

For some matters of study we are experiencing the access in videoconferencing, which facilitates all those students, workers or handicap bearers, than cannot attend the lessons in normal timetable. The experimentation has registered a remarkable attending increment of the number of students attending the courses. The used platform (LearnLink) is simple to use both for teachers, both for students. The initiative has collected many appreciations and the experimentation will be continued in order to extend it to other matters of the course of studies

The previewed modalities of use concur moreover one greater freedom of learning and verification for disadvantaged categories (handicap bearer students, students with learning deficiencies of base or little availability of time). The modalities of access based on different approaches (as an example leaving from a matter rather than from another), favour moreover the cognitive process for the formation of just covered of learning near to personal ability.

Moreover the last version of *Webcen* has been developed so as to concur the same access both for the usual students, both for visual handicap bearers. In fact the portal has been developed according to global accessibility criteria for public Web contents, established by the European Community.

It must be pointed out that the Italian University system does not require students to actively attend classrooms as long as tuition fees are paid. The consequence is that students may try to be graded on a specific course many years after the course was given. Thus the main innovation introduced by the CLINIC project consists in a management control over what has been taught at a given time. A control active at the level of each course and of each single lecture, not as a bureaucratic burden but by showing the value-added to students' comprehension of subject matter taught. The final result is that each Professor is empowered to bring a classroom to the final examination test by a specific date, or as students prefer, and to incrementally grade each student during the semester in order to let them know their grades at the end of the course.

The changes happened in the university system, the progresses of Internet, the Web and all the new technologies

data transmissions have led to the study of new approaches to the formation, in presence and at a distance.

The ulterior developments previewed for WebCen consist in the study of a didactic model of support to the students enrolled to the course in Digital Communication Curricula, innovative for contents and modality of access, that facilitates:

- The creation of cross-sectional competences,
- Is based on a multi-access approach model, mostly at a distance, but in traditional part also (off-lines),
- Allows, in simple way and without particular ties, the education and the verification on-line and off-line through the Internet Portal WebCen and through multimedia supports (CBT and videoconferencing tools).

The Learning Object constitutes the concept around which the new version of Webcen is being developed. Such modules of learning have been considered because particularly adapted for the treatment of interdisciplinary of the matters of study and for the characteristics of modularity, reusability, sharing and standard of description (standard SCORM), that render them economic and at the same time very useful in the process of creation of distances actions both for the interactivity capability, both for personalization they offer. The collections of Learning Object already present in Internet increase the potentialities of such objects, and the definition of a standard on which they are modelled guarantees the effective use of the resources.

### **Monitoring and Evaluation**

CLINIC adopts a Quality control assessment based on the guidelines provided by CRUI (Conference of Rectors of Italian Universities) in the 3 years CampusOne project, [www.campusone.it](http://www.campusone.it), 2001-2004. This methodology consists of a mix of self-evaluation and external peer evaluation, both following a set of specific parameters. The main principles derive from the ISO 9000 standard.

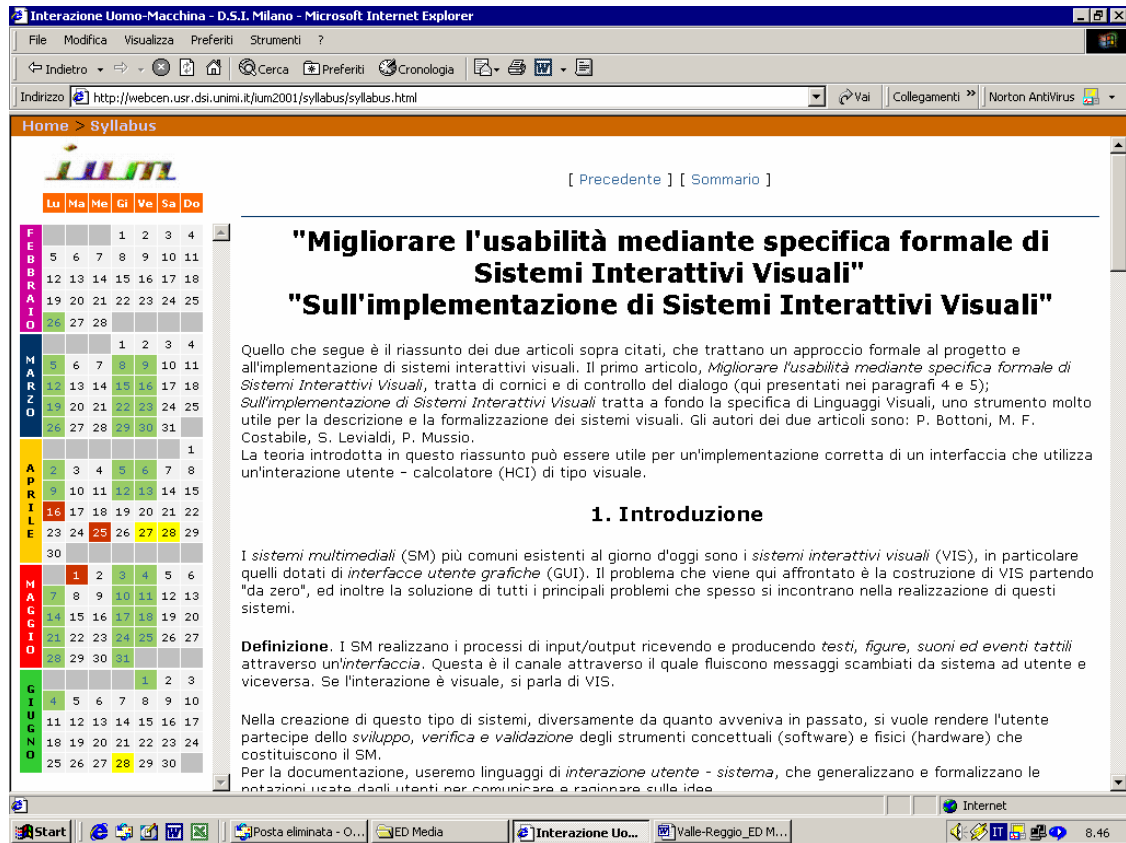
Quality control becomes then an evaluation tool for tutoring, customer satisfaction, process evaluation, leadership, international activities, etc. More information about this model is available at CampusOne website. It is important to notice that the combination of qualitative and quantitative approach can be easily applied to the our test case: Digital Communication curriculum is one of the Italian degree courses chosen in 2001 by CRUI to take part in CampusOne project and experiment its evaluation model. The functions of such a model in distance learning are still under study, together with general evaluation strategies in e learning (Belanger & Jordan 2000; Kirkpatrick 1994; Laurillard 2002).

### **Main Outputs of CLINIC Project**

The outcomes from CLINIC project so far cover various levels of courseware delivery in an open distance education framework. More specifically they include:

- An improved understanding of the benefits gained by students and teachers by practising a web-based Open Learning organisation
- A Library of training material, with an innovative insight into the qualifications required to applicants for a stage in industry which guides the courseware to be delivered beforehand via ODL methodology to prospects
- A guide to basic know-how arising from market labour changes
- Common tools for evaluation and assessment of courseware delivered for scholar and extracurricular activity both from students and companies offering professional stages.
- a dedicated e-learning environment for distant teaching of additional skills a student/person needs to learn in order to fit the know-how required by the stage offered.

The following two Figures show interaction examples taken from the Human-Machine Interaction Course offered in Academic Year 2000/1 at the University of Milan, Italy. All students took their final on 29 June 2001, as for their choice. The complete course web-site is freely accessible to everybody, giving a full record of the course teaching activity most valuable to future students at the time of selecting the next courses in which to enroll. The *webcen* acronym is meant to recall the web-centric teaching support, which drastically cuts the cost figure of many eLearning experiments based on video-servers, recorded lectures, and other structural labor-intensive approaches.



**Figure 1:** this figure shows what the user sees after selecting *Syllabus*. Green Days on the Agenda indicate when a two-hour lecture has been given, days in red indicate holidays, days in yellow indicate when intermediary and final test are scheduled. The Frame at the screen center relates to selecting Friday 16 March.

Interazione Uomo-Macchina - D.S.I. Milano - Microsoft Internet Explorer

Indirizzo <http://webcen.usr.dsi.unimi.it/ium2001/valutazione/valutazione.html>

Home > Valutazione

**Questionario di Interazione Uomo-Macchina 2001**

La compilazione è anonima e riservata agli studenti del corso IUM. Mat:

**Sezioni**

Compila Questionario

Risultati Questionario

**1) Perché hai scelto questo corso ?**

Consiglio di amici	<input type="radio"/>
Lo ritenevo facile	<input type="radio"/>
Conoscevo il docente	<input type="radio"/>
Lo ritenevo pratico	<input type="radio"/>
Altro: <input type="text"/>	<input type="radio"/>

**2) Caratteristiche del corso ( 0 = pessimo - 10 = ottimo)**

Carico didattico	6
Chiarezza espressiva del docente	6
Capacità del docente di interessare gli studenti	6
Modalità di presentazione degli studenti	6
Disponibilità del docente	6

**3) Il corso è coordinato con gli altri che hai seguito ?**

Sì	<input type="radio"/>
No, si presuppongono nozioni mai apprese	<input type="radio"/>
No, si svolgono argomenti già visti	<input type="radio"/>
Altro: <input type="text"/>	<input type="radio"/>

**4) Contenuti del corso ( 0 = pessimo - 10 = ottimo)**

Interesse personale	6
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Operazione completata

Start | Posta eliminata - O... | ED Media | Interazione Uo... | Valle-Reggio\_ED M... | Internet | 8.47

**Figure 2:** this figure shows the on-line course evaluation Form to be filled on-line by each student, who needs to enter his student ID in order not to be able to enter evaluation form twice. Only students registered to a course can fill its evaluation form. This form is indeed a most valuable tool for the Professor to receive a feedback from his students on the quality of material presented and its integration within the whole student curricula so far.

This experiment, now at the third year, addressed order of 600 students in the Digital Communication Curriculum, who are familiar with computing topics. It is also in use this year by 100 first year students in the Science and Technologies for Music Communication, who have a music but little computing background. Students are the main players in Webcen approach, with no need of financial support from Central Administration of the University of Milano.

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