

## Teaching Teleworking and AutoCAD - TeleCAD case study

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### Summary

In the following article we present the Internet based system for TeleCAD course preparation and delivery. The system was developed to meet the Distance Education Centre at Technical University (DECTUG) needs. The Centre delivers Internet based courses, and is involved in course production at local and international level. Example instructions (documents) concerning the pilot course will be presented.

### Keywords

Distance Education (DE), Internet, Web Based Training (WBT), AutoCAD, teleworking.

### 1. Introduction

The idea of the TeleCAD course evolved from the AutoCAD course delivered in ODL (Open Distance Learning) mode for students from Civil Engineering Department at Technical University of Gdansk. The AutoCAD course covers basics of drawing using the AutoCAD program. During the course students are expected to prepare a series of drawings, at different levels of complication. For the purpose of final assessment students have to prepare a drawing that used all introduced techniques. The AutoCAD course in an ODL mode has been delivered at TUG since 1996. Former students were given printed course materials and they were supposed to contact the teacher using e-mail. Both consultations and final assignment submission was done by e-mail. It should have been stressed that the final exam is organised in the TUG computer laboratories. Up till more than 100 students took part in the AutoCAD course (ver. 12.0) delivered in ODL mode at Technical University of Gdansk.



TeleCAD (Teleworkers Training for CAD Systems' Users) is a course of AutoCAD (ver. 14.0 or 2000) and teleworking basics. The course is co-financed by European Union Leonardo da Vinci Programme. It has been developing in co-operation with four foreign institutions from Greece, Finland, Italy and one Polish company Young Digital Poland S.A. since December 1998. The TeleCAD course consists of 9 modules covering basics of drawing in AutoCAD. Each module includes a set of tasks that should be performed by students, with description of appropriate solution. The course materials are prepared as HTML pages to be acquired by the WWW or from the CD-ROM. Polish version of the materials is also available in a printed form. The final assignment of the AutoCAD part is a drawing prepared by a student and sent by mail to the tutor. The TeleCAD course incorporates a module about basics of teleworking in which current technology and methodology of teleworking is presented. Successful students are distinguished by Autodesk Certificate of Completion.

## **2. The prototype system background, requirements and functionality**

While the method of TeleCAD course delivery was discussed several WBT platforms were considered to be used. DECTUG was involved in DE Phare projects with different platforms e.g. WebCT, Learning Space, First Class. They differ in offered capabilities and price. Most of them are oriented towards course materials delivery. They provide user authentication, customisable start pages, user homepages preparation tools etc. For example First Class focuses only on student-tutor communication. Some of the platforms offer tools for organising chat rooms or computer conferences. The main drawback of available packages is lack of good monitoring system. What is also very important, there is very little support for manager of the distance teaching institution. In most platforms there is no support for the course evaluation or tutors' reports. All communication between the tutor and course manager must be performed outside the system.

The proposed system should organise the co-operation between course developers. This includes communication, file sharing and project management tools. The system also plays a role of the course delivery platform. It provides students management, support for tutors, communication environment and assessment tools. It should have been stressed that the course manager, who is usually responsible for many virtual classes, should have information about students' and tutors' activities. He (she) should know if a tutor's activities are relevant to students' needs. This includes answering students' questions fast and in satisfying degree, preparing FAQs (Frequently Asked Questions), preparing and marking Tutor Marked Assignments (TMA's) etc.

Students' progress is a very important issue in distance education. There are a few ways to monitor it with a web based environment. Students perform self-assessment tests and TMAs that give insight to their progress. System may monitor students' activity on discussion lists, access to course material web pages, FAQ lists etc. The last but not least is students' own opinion about their own progress reported by questionnaires.

It is not certain that all above techniques give satisfying information about students' and tutors' performance. However, they give some indication when somebody may have problems. In such situation the manager has opportunity to investigate the issue personally. Without any monitoring support, the manager is incapable of assisting many people simultaneously.

The proposed system consists of a set of loosely interconnected modules. Depending on actual needs it may be chosen which modules should be used in given case. Some modules perform functions that are already present in many existing products or network solutions. They are re-implemented in the system to ensure coherence with other modules.

The system is divided into several independent parts:

- course delivery subsystem,
- course management and monitoring subsystem,

- course material preparation subsystem,
- personal information database subsystem.

The subsystems share the tools, they have a common database of users and a common user interface. They may be however used separately – without the second one installed. course delivery.

### **3. Pilot course delivery – Learning Contract, Learners' Guide, Assignments: Forms and deadlines**

In order to ensure that the course will be performed smoothly the manager, administrators, tutors and students should be precisely informed about their responsibilities. It is recommended to sign a Learning Contract between a student and an instructor. The Learning Contract is a statement of agreement on at least four elements:

- Learning objectives
- Learning resources and strategies
- Evaluations of learning activities
- A time line for completion

With the signature of the contract, the parties accept an obligation:

- The learner commits to work with the materials and to learn the contents
- The instructor commits to provide material, to be ready for support and consulting, and to answer questions.

It must be underline that in addition to the typical problems of conventional training, in the Web Based Training learners and teachers are spatially and temporally severed. It is obvious that not every one is used to learn in self-directed way with telematics-based media. Furthermore, the problems of computer-mediated communication, e.g. the reduction of communication channels, the lack of social context cues, or social information processing, are well-known. The acceptance of the new learning methods depends strongly on reducing the incertitude of the learners. Also instructors are not used to utilise the new forms of teaching and communication in a telematics-based settings. This incertitude on both sides can prevent communication between learners and instructors and thus the success in learning. For the pilot TeleCAD course the special learning contract for instructors was prepared but none was offered for students from abroad.

The Learners Guides and Assignments: Form and deadlines were prepared and sent by regular mail and e-mail to students and instructors before the course was opened. The same instructions are located on the course Web page.

#### **Learner's guide - General**

##### **Goals of the Course**

- To get familiar with teleworking methods using e-mail, a discussion list, FAQ.
- To organize audio and videoconferencing on demand.
- To teach drawing in AutoCAD 14 or 2000.
- To provide means for virtual mobility.
- To provide a flexible way of learning, including choice of time and place.
- To provide access to additional resources related to teleworking issues.

##### **Target Group**

Different groups of CAD systems users:

- Students
- Postgraduates
- Young workers

Table 1 Course Contents and Timetable

Course Contents	Date/deadline	Responsibility
Participants acceptance	13-15.10.2000	DECTUG and partners' organisations
Sending CD ROMs to Greece, Finland and Italy (course materials, AutoCAD 2000, 30-day free trial version)	16.10-5.11.2000	DECTUG and partners' organisations
Filling in a database	6-12.11.2000	DECTUG instructor
Taking part in a survey – Users needs analysis	6-12.11.2000	DECTUG instructor
Editing personal Web pages and using internal e-mail	13-19.11.2000	DECTUG instructors
Drawings in AutoCAD: 10 exercises and final project	20.11.2000-28.01.2001	DECTUG instructor
Taking part in an electronic quiz (teleworking)	29.01–4.02.2001	DECTUG instructor
Taking part in a Discussion List	5-11.02.2001	DECTUG instructors
Finding local links about teleworking	12-18.02.2001	DECTUG instructor
Taking part in a survey – Course evaluation	19-25.02.2001	DECTUG instructor
Local TeleCAD course delivery	March, April 2000/2001	Participant with help of local project co-ordination unit

### Password Practice and the Permissions to Use the Learning Environment and The Course Materials

- The list of passwords has been delivered to the contact person from partner's institution who is responsible for delivering them to the learners.
- The password is personal.
- The learners and the staff of the partner's institution are not allowed to forward the password to outsiders.
- The learners have a right to use the learning environment and the course material only for their personal training.

### How to Get into the Course Learning Environment?

- TeleCAD course is a combination of online environment and offline (CD ROMs) resources.
- The entire international learning environment can be found via WWW.
- To access the learning environment the learner needs Internet Explorer min. 4.0.
- The address of the international TeleCAD WWW-site is <http://www.dec.pg.gda.pl/dec/telecad/pilot/>

### Role of The Course Provider

The international course provider (TUG Gdansk, POLAND) is responsible for:

- International learning environment.
- International course material.
- International discussion facilitation in co-operation with other partners.
- International technical support.
- Approval of the final work.

- Issue a certificate to the learners when the course is successfully completed.

The course provider is responsible for the performance of the international World Wide Web -site (WWW), the core English learning material and WBT@TUG services during the course.

### **The Role of The Partner's Organisations**

The partner's organisations will bring a national/local viewpoint to the course content in each of the participating countries.

The partner's organisations has the following tasks:

- Local marketing and selection of the group.
- Guarantee the AutoCAD software for the course participants (ver. 14 or 2000).
- Local learning process facilitation.
- Local technical support.

The guide for the AutoCAD part was prepared by Pawel Klosowski and more instructions connected with installation the software and the procedure of communication with instructor are included there.

### **Assignments: Form and deadlines**

#### **Final grade weight**

1. AutoCAD project – 25 points
2. Teleworking skills – 25 points
3. TeleCAD course delivery in the country – 50 points

### **Successful participants will be awarded with Autodesk Certificate of Completion**

#### **Requirements for with Autodesk Certificate of Completion**

1. AutoCAD project – min 15 points
2. Teleworking skills – min 15 points
3. TeleCAD course delivery in the country – 30 points

*Table 2 Course grade weight*

<b>Component</b>	<b>Comments</b>	<b>Date/deadline</b>	<b>Person responsible</b>
Participants acceptance, sending CD ROMs to Greece, Finland and Italy (course materials, AutoCAD 2000, 30-day free trial version)	Obligation	13.10-5.11.2000	Anna Grabowska, Zbigniew Jarosik, Elzbieta Pawlowicz
Filling in a database	Obligation (2 points)	6-12.11.2000	Slawomir Ginter
Taking part in a survey – Users needs analysis	Obligation (2 points)	6-12.11.2000	Monika Zabik
Web pages	Obligation (2 points)	13-19.11.2000	Jan Goralczyk
E-mail	Obligation (2 points)	13-19.11.2000	Anna Grabowska
10 exercises	Optional	20.11.2000-14.01.2001	Pawel Klosowski
Final Project	Obligation (25 points)	15-28.01.2001	Pawel Klosowski
Electronic quiz (teleworking)	Obligation (2 points)	29.01–4.02.2001	Anna Grabowska

Discussion List	Obligation (5 points)	5-11.02.2001	Anna Grabowska
Links	Obligation (5 points)	12-18.02.2001	Anna Grabowska
Taking part in a survey – Course evaluation	Obligation (5 points)	19-25.02.2001	Monika Zabik
TeleCAD course delivery	Obligation (50 points)	Summer semester 2000/2001	Pilot course participants and the local TeleCAD project co-ordinators in Greece, Italy and Finland

#### 4. Conclusions

The pilot course was delivered for 16 people from Greece (5), Finland (2), Italy (2) and Poland (7). The final evaluation is based on the marks the course participants collected and the analysis of the questionnaire results. It should have been stressed that only 5 Polish students collected at least 60% of required points. The teleworking part was performed much better than the AutoCAD one (50 %). The final result, 30% of successful participants, is not very optimistic. The results have been discussed and the final comments are as follows:

- For some of the participants English language was a barrier in the learning process.
- The course localisation should have been done concerning the AutoCAD materials as well.
- The participants from partners' organisations did not have enough basic skills and knowledge connected with CAD software (it was assumed that they would be able to play the tutors' role in the next pilot course).
- The participants selection for the pilot course should have been done with much more care concerning the ability to play a tutor role in the future.
- The participants should have been motivated enough in order to take part in ODL courses.
- Web Based Training (WBT) environment requires reliable Internet connection – it works perfectly while the course is delivered in the Intranet system.
- Tutors who are responsible for the introduction to WBT environment should have been aware about facilitating actions which are crucial for the whole learning process performance.

The TeleCAD course is now delivered for the regular students from Civil Engineering Department of Technical University of Gdansk. At the moment about 30 students are taking part in the course. The final evaluation of the TeleCAD course (Polish case) will be located at the URL <http://www.dec.pg.gda.pl/telecad/evaluation>

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