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Workshop

Tools and Techniques for E-Learning

1.-3. Juni 2005
in Potsdam

Program

State: 20.05.2005

Wednesday June, 1st 2005

Pre-Registration beginning at 18:00

Icebreaker (beginning at 19.00)
GFZ Telegrafenberg

Thursday June, 2nd 2005

Registration beginning at 9.30

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Moderation: J. Wächter

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Prof. Dr. Josef Strobl (University of Salzburg)

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Detlef Thuerkow, Cornelia Gläßer, Sebastian Kratsch, Martin Luther University Halle

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USING THE INTERNET TO ENHANCE INDEPENDENT LEARNING.
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Marco Rademacher Free Universität of Berlin

E-LEARNING - APPLIED E-SCIENCE OR LEARNING AS A SOCIAL PROCESS?

Prof. Dr. Josef Strobl (University of Salzburg)

ABSTRACT:

Looking back on 10+ years of online eLearning, and designing the next steps in distance learning innovation, the author reviews evidence that social interaction and interactive participation are key indicators for success in online learning. From an instructional design perspective, active learning, collaborative exercises, short feedback loops, game-based learning, microlearning and peer support are essential components in the effective and sustained acquisition of new knowledge and skills. While information technologies are closely linked to our learning objectives, communication skills supported by technology are essential for learning processes. ICTs set in an appropriate social and communication framework therefore are indispensable for achieving the objective of individually optimized learning.

ON THE DIDACTICAL POTENTIAL OF ELEARNING COURSEWARE

Thanh-Thu Phan Tan, Uwe Frommann, L3S Research Center, Hannover

ABSTRACT:

The use of information and communication technology (ICT) is becoming an inherent part in higher education. According to recent reports, however, the actual use is concentrated on its qualities as an organisational and logistical tool. The didactical potential does not come into account in teaching scenarios where learning management systems or the like are used to spread materials and announcements. Teachers should become aware of the didactical values new media can bring about through a large diversity of scenarios. In order to realise an appropriate use of ICT in higher education, a variety of competences is needed in the scope of the four dimensions in eLearning: didactics, technology, strategy and multi-media based learning objects. It is needless to say that these competences can hardly be comprised by one person. Therefore, it is common practice to engage several people in the process of eLearning. This implies a need for a mutual basis for arrangements and action. In other words, a process oriented and team based course of action is necessary for a successful implementation of eLearning. In our contribution, we will demonstrate a process model that takes into account the characteristics of eLearning design and project management. The goal is to establish a common foundation for all participants involved in the processes of an eLearning project, and to provide incentives for teaching/learning scenarios with didactical value. Furthermore, we will show how the didactical attributes of eLearning can be described and visualised for quality assurance and self evaluation means.

COPYRIGHT ISSUES FOR DIGITAL MATERIAL AND ITS DISTRIBUTION

Margo Bargheer, Niedersaechsische Staats- und Universitaetsbibliothek Goettingen

ABSTRACT:

Passing on information within the traditional model of teaching face-to-face had been mostly volatile and for a circumscribed audience. It therefore required less attention on possible copyright infringements unless the courses had been published outside this audience. E-learning due to its digital existence offers new possibilities of archiving, re-use and distribution. Hence the scientific communities worldwide have been developing networked public repositories and retrieval mechanisms.

These new information structures now allow worldwide verification of contents that so far were only locally available. In order to fully use the potential of e-learning materials special care is needed to avoid unwanted copyright infringements or other legal problems. This refers to the local teaching situation as well as to storage, reuse and distribution – be it via local intranets or the internet. The paper gives a general introduction to the legal concepts of intellectual property right and copyright, looks at the different use-scenarios of e-learning material and analyses potential problems like copyright infringements. A few practical examples are used to show one hand national characteristics of the respective legal framework and on the other hand material-specific problems.

E-LEARNING AND E-TEACHING: MEDIA DEVELOPMENT AT THE UNIVERSITÄT STUTTGART

Barbara Burr, University of Stuttgart

ABSTRACT:

Right from its start in 2001 the new rectorate of the Universität Stuttgart tackled the important issue of implementing the new media in university life. It was the time of the great state programs for eLearning in which the Universität Stuttgart also took part in.

The rectorate and the consulting steering committee (consisting of engaged professors, assistant lecturers, members of the administration and the computer centre, and students) wanted to broaden the knowledge basis by many initial projects

From the discussion in the steering committee resulted four main objectives for media development:

1. Improvement of teaching and learning via multimedia technologies
2. Creation of reusable online teaching modules
3. Achievement of technical and didactical competence on a broad basis
4. Commercialization of online courses for scientific industrial training

For obtaining these objectives a concept of three steps was developed.

In a first step multimedia technologies were to be introduced or enhanced in the lectures and classes on-campus. The result of this would be multimedia elements like slides, videos, audios, animations and simulations accompanying the scripts. This was achieved by the program "100-online".

In a second step those multimedia elements were to be integrated in re-usable learning modules which contain complete learning tasks and tests for self-assessment. These learning modules can be used by registered students for instruction and learning off-campus. The program "self-study online" in which such learning modules are produced is still going on.

In a last step the learning modules are intended to build complete learning applications which can be used as training offers for professionals or as online study courses. "Training online" is the provisional name for this program to be started in the near future.

EYE LEARN - AN INTERACTIVE WEB BASED E-LEARNING ENVIRONMENT IN PHOTOGRAMMETRY AND REMOTE SENSING

Maria Pateraki, E. Baltsavias, ETH Zurich - Institute of Geodesy and Photogrammetry

ABSTRACT:

The paper will present the concept of a project which hopefully will be aproved in May. The project summary follows below.

The main aim of this project is to integrate in the Bachelor courses Fundamentals of Photogrammetry (FoP) and Remote Sensing (RS) given by the Photogrammetry and Remote Sensing (PRS) Group, a WEB-based interactive e-Learning environment. These courses are compulsory and introductory, forming the base for many more courses at the Master level. The e-Learning framework and tools that will be developed based on the content of each course will allow the lecturers to communicate information in a more engaging and effective way to the students. Richmedia and efficient didactic methods will be employed. Interactive processes, dynamic objects and virtual experiments will stimulate understanding through a number of learning objects. The learning objects will include in addition to text, images, videos, WEB-links with an associated Assistant, interactive quizzes, simple on-line programs and possibility to use own data, acronyms and glossaries of used terminology, cross-links between the different learning objects, related literature and case studies. Emphasis will be given to the understanding of theory through own problem-solving oriented work. Evaluation and self-evaluation procedures will allow better control of what is learnt and how well and will allow a refinement of the e-Learning environment.

This project will be exploited as a base for using similar techniques in the other courses of our Group and to introduce e-Learning technologies to all teaching personnel.

AN E-LEARNING TUTORIAL FOR RADAR REMOTE SENSING WITH RAT

Gerhard König, Marc Jäger, Andreas Reigber, Technical University of Berlin, Geoinformation Science, Computer Vision

ABSTRACT:

E-Learning materials and courses are becoming increasingly established in German universities. One reason is that technical pre-conditions for successful e-learning – a private internet access -improved considerably. Furthermore economics has been a driving force behind growth in online professional education. At the Technical University of Berlin the Departments of Geodesy and Computer Vision are engaged in online education, offering a tutorial for remote sensing.

The tutorial, structured in several chapters which are accompanied by exercises and tests, allows a performance linked control. User action and test results are recorded in the personal data file. This information is used to adjust the exercises and to guide the students through the course depending on their knowledge. Techniques for processing radar images build a main focus of the tutorial. Hands-on exercises covering SAR (synthetic aperture radar) topics are introduced for practical work deepening students' understanding of remote sensing algorithms. For that purpose, test data of several study areas are available conveying practical experience in the use of radar tools developed at TU Berlin. Communication between the students is managed in a forum, where ideas and problems are discussed and solved collaboratively.

RAT (Radar Tools) is a collection of tools for processing SAR remote sensing data, developed at Berlin University of Technology for ongoing research and education. Students are encouraged to actively participate in software development, adding new functionality to the SAR-toolbox. In practice, it has been observed that students are significantly better motivated when recognizing that their work is becoming part of an ongoing bigger project which is of general use. RAT is an ideal platform for experimentation and learning, as it is easy to extend and provides a convenient data handling framework.

The development of RAT is motivated by the fact that modern remote sensing software systems like Erdas Image or ENVI provide only basic SAR functionality. Advanced algorithms have to be implemented by each researcher independently. RAT aims to bring modern SAR algorithms to a wider user-base by simplifying the data handling and processing of complex SAR data. RAT can be executed using the free IDL virtual machine under various operating systems.

Of course access to the complete set of materials is free.

INTRODUCTION INTO SECOND GENERATION WEB APPLICATIONS APPLYING XML

Günter Pomaska, University of Applied Sciences Bielefeld, Faculty of Architecture and Civil Engineering

ABSTRACT:

Second generation Web applications, are based on Extensible Mark-up Language (XML) and related technologies. HTML based applications are directed towards publication. In future, XML will be focus on structured information storage, interaction and distributed processing of data.

XML is a meta language for structuring data. XML uses tags, keywords in angle brackets, and attributes, followed by values embedded in double quotation. Comparing to HTML, the meaning of the tags and attributes is not defined in XML. Interpretation follows the application. XML files are plain text files, readable with simple text editors. Applying XSL (Extensible Style Sheet Language) provides translation into formats for Web browsers or print media.

SVG (scalable vector graphics) stands as a Web standard for two-dimensional graphics, formulated in XML. Vector graphics need less storage memory and display as enlargement better quality as raster graphics can do.

VRML (Virtual Reality Modelling Language), the former Web standard for three-dimensional graphics, is now redeemed by the standard document type definition for extensible 3D (X3D).

Members of the XML family of languages will become in a short time period substantial impact in the field of E-learning. XML documents can be downloaded from a server and published on any client sided platform. Dynamic Web applications provide documents upon user requests with access to a XML database. Software vendors take advantage from XML files because of the powerful support by object oriented programming languages, like Java or PHP. In addition, the open standard of XML makes it an ideal tool for E-learning communication.

This contribution introduces in the formulation and application of XML files and demonstrates the basics of operating in a client server environment. Small and simple examples focus on language support in Java and PHP, applying parsers, translating graphics into SVG and doing some XSL translation.

USE OF SVG AND ECMASCRIPT TECHNOLOGY FOR E-LEARNING PURPOSES

Andreas Neumann, Institute of Cartography, ETH Zurich

ABSTRACT:

SVG (Scalable Vector Graphics) is a XML based markup language to describe and integrate vector graphics, raster graphics and text. SVG is developed by the W3C web consortium as an official web standard, with the support of major computer graphics and mobile phone companies, such as Adobe, Canon, Corel, IBM, Kodak, Nokia, Opera, Sun, etc. SVG Mobile was furthermore adopted by the 3GPP consortium as a part of the 3GPP mobile phone standard.

SVG graphics can be animated and enriched with interactivity. Scripting languages and network interfaces help to build interactive applications. SVG's rich visualization options and the support of interactivity make it a natural candidate for providing graphics and interactive examples in e-learning environments. The ability to access the SVG source code and have a glance "under the hood" to see how things are made, is especially useful for learning and sharing purposes. SVG also provides a "fun" way to introduce programming and illustrate the functionality of algorithms. Students are usually motivated if they can graphically visualize what they program.

The paper first summarizes SVG's capabilities. A second part will discuss usage scenarios and give a number of e-learning examples, to illustrate the usefulness of SVG illustrations and applications for e-learning purposes. Domains will include mathematics, geometry, electronics and GIS. Development tools and authoring systems will be mentioned. The last part will discuss strengths and weaknesses of the SVG approach and outline current development regarding the upcoming SVG 1.2 version.

DEVELOPMENT OF SUSTAINABLE E-LEARNING CONTENTS WITH THE OPEN SOURCE ELESSON MARKUP LANGUAGE ELML

Joël Fisler, Susanne Bleisch, Geographisches Institut, Universtität Zürich

ABSTRACT:

The open source eLesson Markup Language eLML has been developed out of the proven XML-based content structure of the Swiss Virtual Campus (SVC) Project GITTA (Geographic Information Technology Training Alliance). This paper presents how sustainable e-Learning contents can be developed, exchanged and employed using the eLML structure. eLML is based on the didactical concept ECLASS: entry, clarify, look, act, selfAssessment and summary (adapted from Gerson 2000) and is modular on lesson level. Every self-contained lesson is subdivided into one or several units which are structured according to the ECLASS concept. To allow different teaching and learning scenarios most of the structure elements are optional or can be repeated several times. Development of a lesson starts off with the definition of learning objectives and the planning of contents for each part of the didactical structure. This assures that didactical aspects are considered in a field where technical problems sometimes become too prominent. Saving the contents in an XML-based structure provides many advantages, ranging from the sustainable management of a pool of lessons to different presentations of the content according to varying requirements. Out of a pool of eLML-based lessons, where each lesson also contains a glossary, bibliography and metadata section in addition to the actual contents, different courses can be assembled. eLML is not a new learning management system (LMS) but eLML-based e-learning contents can, for example, be transformed to HTML and used on a web server in combination with a LMS. In the future, it shall be possible to use eLML-based content via the IMS Content Packaging Format directly within a modern commercial or open source learning management system.

The paper concludes with experiences from the development of eLML itself, from the design of e-learning contents based on this structure and from the use of eLML-based contents in conjunction with a LMS. The current use of eLML in several SVC projects ensures that eLML will be enhanced and kept up to date for future e-learning projects.

DEVELOPING AUTHENTIC AND VIRTUAL E-LEARNING ENVIRONMENTS

Bert Veenendaal, Elizabeth-Kate Gulland, Duncan Hall, Department of Spatial Sciences, Curtin University of Technology, Perth, Australia

ABSTRACT:

As part of their learning process, students often need to understand and interact with real world processes. Traditional learning activities such as field trips, site visits, videos, visiting speakers and live interviews have been used to achieve this. Because of various practical, legal and political issues, such activities can be difficult or even impossible to organise.

E-learning can play a vital role in providing suitable and effective learning environments to enhance the knowledge and skills of students. Such an environment can provide a virtual interface to a real-world scenario or process. Students need to make decisions and receive responses in a highly interactive exchange. An e-learning environment must also be authentic, providing the student with meaningful and realistic information and scenarios that represent real world processes in a practical manner.

The work being presented in this paper describes the virtual e-learning developments, experiences and evaluations that have been undertaken by the Department of Spatial Sciences at Curtin University across a number of projects. The Virtual Online Learning (VOL) project outcomes included a range of online and virtual modules in the spatial sciences – geographic information science (GISc), global positioning systems (GPS) cartography and surveying. The Virtual Industry Link Learning Environment (VILLE) project is developing interactive virtual site visits that emulate tours of processing facilities. The aim is to provide stimulating and interactive learning environments that adequately prepare a student for real world conditions.

VIRTUAL LANDSCAPES AND EXCURSIONS - INNOVATIVE TOOLS AS A MEANS OF TRAINING IN GEOGRAPHY

Detlef Thuerkow, Cornelia Gläßer, Sebastian Kratsch, Martin Luther University Halle

ABSTRACT:

Virtual field trips are an excellent web-based teaching tool to convey scientific knowledge in geography. This innovative three-dimensional tool enhances the understanding of natural and man-made features of landscapes, and their development over time and as a part of a particular ecosystem.

Numerous interactive functions and knowledge tests support the student's three-dimensional understanding.

Qualified staff are needed to create such virtual excursions, animations and visualisations of landscapes. Teaching experience as well as excellent programming skills and a good scientific knowledge in geography are an essential prerequisite.

The effort required to create these tools is justified by facilitating interdisciplinary

utilisation in various academic forums and the exploration of new areas. The maintenance of the web-based teaching tools is a problem, which has not yet been solved.

The paper will show on two different regions the solution for this innovative tools.

DEVELOPMENT OF AN EDUCATIONAL SOFTWARE SYSTEM FOR THE DIGITAL MONOPLOTTING

Devrim Akca, Matthias Fluehler, Jana Niederoest, ETH Zurich, Institute of Geodesy and Photogrammetry, ETH-Hoenggerberg

ABSTRACT:

The aim of this work is to develop a user-friendly windows-based educational software system for explanation and demonstration of the procedure of digital monoplotting. The software system was primarily designed to be used by teaching personnel in lectures to bring over this particular topic of photogrammetry to master students in an attractive way. The program consists of two parts: an HTML-based animated tutorial presenting the theoretical background of the method and a practical part demonstrating the procedure with the real data.

Monoplotting is a procedure of single image photogrammetry for obtaining real-time 3D coordinates from the measurements in image space. The theoretical part of the program is a web-based tutorial focused on explanation of the topic. It gives the definition and background of monoplotting, required data, methods used in the process and application areas.

The demonstration tool was implemented in C programming language. It allows import of the DTM (regular raster) as well as of an aerial / ortho image (jpg). In the record modus, single points or lines can be measured in the image while the 3D object coordinates are displayed in real time. The DTM with the image data as well as the measured features can be exported in VRML format for the visualization. In case of using an aerial image, an orthoimage is calculated for the overlay with the DTM.

Although at the moment the software is implemented only for demonstration of the monoplotting concept, our methodology offers a framework for the computer-assisted teaching in general. The topic can be replaced by another one. Overall structure provides an easy and didactic tool for teaching.

CASE-BASED LEARNING IN INTERDISCIPLINARY LEARNING ENVIRONMENTS

Johannes Haack, Dennis Mischke, Universität Potsdam, Interdisziplinäres Zentrum für Kognitive Studien

ABSTRACT:

Case- and problem based learning environments support learners both, in the active process of self-directed learning as well as in the consolidation of prior knowledge. Especially case-based learning fosters the usage of transfer by providing appropriate stimuli to recall previous knowledge.

The present contribution discusses the suitability of the instructional design principles as suggested by the Goal-bases Scenario approach by Roger Schank and the Learning-By-Design approach by Janet Kolodner to develop blended-learning modules in the context of a new interdisciplinary Master curriculum at the Potsdam University.

From this perspective, the potential of case-based reasoning and collaborative reflection will be evaluated. In addition, several suggestions about how case-based learning modules can be implemented in blended learning scenarios will be made.

USING THE INTERNET TO ENHANCE INDEPENDENT LEARNING.

Colin Arrowsmith, RMIT University, Melbourne

ABSTRACT:

This paper reviews two case studies that explore new approaches to teaching and learning that do not rely on a teacher-focussed or teacher-centred style, but rather utilise the Internet as a means of communicating between, and with, students.

The first case study involves the use of the Internet to enhance the field experience obtained by geospatial science students in their undergraduate studies. Learning through 'Action Learning and Action Research' this study uses a Virtual Field Trip (VFT) to prepare second year students for a week long field excursion to a popular national park in western Victoria, Australia. Initial findings are that whilst students found the VFT useful and would prepare them for fieldwork, they would not like to see it replace actual fieldwork.

The second case study was part of an international collaborative learning project developed by The Online Center for Global Geography Education under the auspices of the Association of American Geographers. RMIT undergraduate students participated in on-line learning with a group of undergraduate students from Utrecht University in the Netherlands. Whilst research has shown that collaborative learning allows students to attain a higher level of cognitive thinking and interest, this remains unclear with regards to on-line collaborative learning. The module evaluated by the students dealt with population geography. The module consisted of four lessons, each with a series of pages of textual and graphical material and a series of questions and activities. Students were divided into 16 groups of six students, three from RMIT and three from Utrecht. Overall student feedback was positive, but a number of students experienced difficulty in organising themselves and getting work completed on time. Questionnaires were issued to students prior to and after the module had been completed. Evaluation is still underway.

GIS - LEARNING BY WEB-BASED COLLABORATION

F. Merting, K.-P. Holz, BTU Cottbus

ABSTRACT:

Geographical Information System (GIS) software is essential part of many courses in Hydro- and Geo-Science curricula. It is being used to analyse and present information from geographic and geo-socio-economic environment as well as from numerical simulations to which it frequently is interfaced. So it has become a key-tool for many engineering and geo-economic projects in planning and consultancy.

Using software is frequently taught bottom-up. Firstly, students have to familiarise with the way of handling the software; secondly, they have to understand the features provided and thirdly, they have to learn how to creatively adapt and combine features to solve non-standard problems. Experience shows that just running though software-manual in classrooms is boring and de-motivating. The presentation of theoretical background of software features lead to loss of motivation too, though this part is of crucial importance to prevent students from using GIS as game-box. The third level is best taught through complex examples from geo-/engineering practice.

In order to obtain better teaching and motivation results, a top-down approach has been investigated. Students are given a complex project from hydraulic engineering which needs GIS support on different levels. So first they learn to identify the problems and tasks for which GIS might be applied; then they learn whether the corresponding tools are contained within the software package given or - after inspecting the theoretical methods typically applied within GIS - how to creatively combine tools to fulfil requirements resulting from the problem. The practical elements of running software - input and data handling - are just picked up intuitively on the fly.

This approach has been followed within the 'Hydro-Europe' intensive programme within the Socrates/Erasmus framework together with eight European Universities. The objectives of Hydro-Europe is to promote, in a global European vision, the key concepts, the methodologies, the tools and the good practices which are today essential for a sustainable water management. As water management just by size of river basins demands for international collaboration, project works have been given to teams of students. The teams consisted from students from the different participating universities. The team composition thus represented a mixture of young people from different mother tongues, cultures, education and disciplines. So this approach implicitly covered the aspect of learning 'intercultural collaboration'.

The next aspect concerned support for collaboration. Also in this field new an approach has been taken by using Web-services and the Internet. So all team members could reside at their universities and work together in a 'virtual environment' without knowing each other personally at the beginning of the project. Moreover, as collaboration in this environment demands for new skills and a new `technical culture`, this aspect became an additional learning objective.

Experience from the teaching experiments with respect to the European dimension of education clearly shows, that it is possible to develop common high quality university teaching courses in this manner and to establish life-long Internet-links between students from the involved countries ('virtual alumni chapter'). These positive experiences have been implemented into the Erasmus-Mundus Master Courses 'Hydro-Informatics and Water Management'.

E-BOARD TOOLSET

H. Schulze, HZO Film & Medien, Berlin

ABSTRACT:

This project has been developed within the "Multimedia-Förderprogramm 2003" of the Humboldt-University, Berlin. Additional team members have been Prof. Dr. Dr. h.c. Harald von Witzke and Uwe Pirr.

To combine knowledge in presentations, lectures and various forms of learning material with pictures, sound, video and 3D to make it more obvious is nowadays quite necessary. "E-Board" uses a compact interface and nonlinear structure with a easy-to-use external data structure.

The "E-Board Toolset" consists of a editor and a reader which both are based on the QuickTime architecture and technology. They are QuickTime movies itself, combined and programmed with the interactive functions of an application.

- Arrange presentations in hierarchical chapters with Pictures, Text, Rollover, Audio or Video/3D
- Synchronize Audio with Pictures, Text and Rollover
- Synchronize Video with Text
- Prepare your content with easy-to-use droplets
- Store presentation in XML format
- Distribute your multimedia presentation easily to any individual who uses QuickTime
- Integrate your presentation on CD`s, DVD`s or websites

REMOTE EXPERIMENTS IN EXPERIMENTAL PHYSICS

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ABSTRACT:

Information technology has made experimenting via the internet possible. Different from simulations, applets or animations, remotely controlled experiments give students the possibility to experience in reality physical situations and the realistic response to parameter variations. We demonstrate how to measure the efficiency of a solar cell by recording the IV curve in the dark and under illumination. In a second experiment we determine the hysteresis of a ferromagnet. Both experiments are completely isolated from the operator; they have been implemented in a large engineering class and were accessed several hundred times in the course of a semester.

EDUCATION OF PHOTOGRAMMETRY IN FINLAND

Henrik Haggrén, Marika Ahlavuo, Petri Rönnholm, Jaakko Järvinen, Hanne Junnilainen, Hannu Hyyppä, Helsinki University of Technology, TKK, Finland

ABSTRACT:

In Finland, the education of photogrammetry has been an essential part of the surveying curriculum. Traditionally it has been organized only on the academic level. In this paper we describe the current curriculum as far as it regards education of photogrammetry and remote sensing at Helsinki University of Technology, TKK. We will also present some experiences in applying modern

progressive learning theory when providing parts of our education to primary and secondary schools.

Beginning in Fall 2005, the surveying curriculumn at TKK, will be arranged according to the new European academic scheme, also called as Bologna agreement. The main change will be the division of the former master`s studies to two consecutive phases, which will be three years` candidate studies and two years` masters studies. Within surveying candidate studies, the curriculum will have two options, one for land economics, and one for geomatics. Geomatics will further divide into two parallel modular sections, one for geoinformatics, and one for geodesy and photogrammetry. During the master`s level, photogrammetry will specialize to both photogrammetry and remote sensing.

Within the new academic curricula, the education has been organized in modules, which build vertical learning chains in progressive manner. As far as it concerns photogrammetry, we have made first experiments in progressive learning also with pre-academic generations, i.e. within primary and secondary schools. There the tasks have been in understanding the theory of central perspective and to apply it to digital photography and steresocopy. The subjects we have dealt with have been biology, physics, mathematics, informatics and geography.

PROJECT BASED LEARNING IN GEOMATICS AT AALBORG UNIVERSITY

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ABSTRACT:

The paper deals with the education in Geomatics at Aalborg University (AAU), Denmark. Since its foundation in 1974 AAU has been used Project Based Learning (PBL) as educational model. In each of the 10 semesters, which the study of Geomatics lasts at AAU, a project has to be carried out by a group of students. The paper discusses the practical experiences with this approach. Some examples of project work in the field of photogrammetry and remote sensing are given. Teachers and researchers of AAU recently published a book on the Aalborg PBL model, in which the progress, diversity and the challenges of the approach are documented. Some of the findings in this book will be presented. Some of the education in Geomatics is done by means of the Internet. Interactive learning programs are used by means of the Internet, working papers of projects are published on the Internet and literature is accessed from the Internet. Other e-learning is practised within AAU`s Masterdegree programme in Geoinformatics, which lasts two years and is carried out since 1995. It combines distance education and weekendseminars. Experiences from using both types of e-learning will be presented.

EUROSDR'S EDUSERV SERIES - TRANSFERRING KNOWLEDGE FROM THE RESEARCH TO THE USER DOMAINS BY DISTANCE E-LEARNING

Kevin Mooney, Secretary-General, EuroSDR, The Dublin Institute of Technology, Ireland

ABSTRACT:

This paper concerns an initiative of EuroSDR (formerly OEEPE) in the area of continuing professional development (CPD) by distance eLearning and EduServ3 (Spring 2005) represents the third installment of this annual eLearning distance education service.

The EduServ series is intended as a means of transferring the findings of the research activities of EuroSDR from the research to the user domains of the spatial information sciences. It is primarily, but not exclusively, aimed at staff of Geographic Information (GI) production organizations such as national mapping and cadastral (NMCA) agencies. In practice, however, participants are drawn from NMCAs, the private and public sectors and the academic community.

Each installment consists of a series of short (two-week) eLearning distance courses, which run consecutively. The courses are practically focused and follow the principle of "learning by doing". Participants come together for a two-day workshop prior to the commencement of the courses where they meet other participants and receive course material and hear background presentations in the context of the courses.

Challenges that face the course designers and organizers may be seen as

(i) accommodating participants from a broad range of diverse organisations with considerable
(ii) differences in educational and cultural experience;
(iii) achieving a practical "learning by doing" element to Internet-based courses in technical areas;
(iv) providing timely and effective learner/learner and learner/teacher communication;
(v) evaluating the performance of the participants in a reliable manner and providing effective
(vi) feedback; and
(vii) building a sense of 'class group' and enhancing the learning experience.

In this paper the courses, which range from 'Digital Cameras and Sensors' to 'Positional Accuracy Improvement in GI Databases' are placed in the context of the objects of EuroSDR. The means of designing, delivering and assuring the quality of these courses to meet the pedagogical challenges, as outlined, are addressed in detail.

DISTANCE LEARNING COURSES FOR DISSEMINATING REMOTE SENSING TECHNOLOGY AND ENHANCING UNDERGRADUATE EDUCATION

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ABSTRACT:

This paper presents the results of three seven-week distance education courses entitled The Use of Remote Sensing for Environmental Studies for Undergraduate Professors. In Brazil distance learning has become a crucial tool for broadening education outreach to its territory and making available quality programs and materials to different audiences. Among selection criteria, student geographic location was one of the most important. Students residing far away from the Brazilian Institute for Space Research (INPE) headquarters had preference, because they have less chances of attending courses at INPE and less access to information.

The main goal of these introductory courses is to diffuse the use of remote sensing as part of the curriculum and pedagogical resource to teaching science topics in universities. The objective is to create collaborative learning opportunities through on-line courses for in-service college educators fostering their continuing professional development, reinforcing the importance of applying new technologies and encouraging them to disseminate what they have learned among students and colleagues.

A free distance education software called Teleduc has been used to support these web-based courses. It has facilitated the interaction among students with different backgrounds (Geography, Geology, Agronomy etc.) creating a rich cooperative environment.

Hands-on exercises have been made available through specially structured tutorials and selected datasets. Students are encouraged to use SPRING (INPE's image processing free software) and gather data for their own study areas among the several public sources available (CBERS and LANDSAT images, digital maps, SRTM topographic data etc.).

The outcome of these courses has been extremely positive. It turns out that on-line courses meet the need for flexible and interactive training enabling students to increase their knowledge and dissemination skills. Our group intends to keep improving and encouraging the creation of more advanced distance courses such as remote sensing applied to Hydrosphere, Agriculture, and Urban Studies.

CUSTOMIZING LECTURES AND EXTENDING THE CONTENT POOL BY USING GEOINFORMATION.NET

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ABSTRACT:

The internet platform geoinformation.net offers 14 modules with a huge amount of content to support blended learning proposals. The content covers a basic set of academics with the intention to provide a basic curriculum for geoinformation.

A fundamental concern during the development of geoinformation.net was to ensure a maximum of flexibility in terms of content combination and extensibility of the content pool. Closely connected with this point was the hope to increase the level of content reuse by reducing the content adoption barrier level.

Starting from the geoinformation.net platform there are several demands to make on the functionality of the interaction tool, the LectureBuilder. Those demands include technical demands on the one hand and interaction demands on the other hand. Due to this, one demand was to support the geoinformation.net specific lecture navigation, as described in Steinrücken&Plümer (2004), and the geoinformation.net specific stylesheets for any lecture created by the LectureBuilder. Furthermore a user management is required to remember once created lectures of registrated users to enable them to edit these lectures and then download them again.

To achieve a long-term usability of the LectureBuilder and the connected product, the lectures, the LectureBuilder is based on polpular international standards, like the content modules. The standards mentioned before are in particular standards of the world wide web consortium [W3C] (XML, HTML et. al.). This proceeding compared with proprietary solutions offers serveral advantages like no license fees, downward compatibility of standard successors and a high level of interoperability. These are advantages which are essential for the long-term availability of project contents and services. In addition a couple of presentation tools like PowerPoint offer the possibility to export HTML and open by this way a possibility to generate slides to expand the content pool of geoinformation.net.

Nowadays the LectureBuilder tool is available via http://www.geoinformation.net.

VIRTUAL PATIENT - INTERACTIVE STORYTELLING

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ABSTRACT:

Virtual Patient has been realized for the Learning Lab Lower Saxony, Hannover, Institute for Media Research, Braunschweig and the Karolinska Institute, Stockholm.

This e-learning simulation project makes it possible for medical students to practise conducting a diagnostic discussion with a "virtual patient". Based on these simulated conversations with a "virtual patient", the future doctor can practise diagnostic technique, trying to determine the ailment at hand. The patient is played by an actor who acts out a range of reactions. These responses are captured on digital video and organised in a databank. The fundamental principle is to analyse and represent the type of conversation that a doctor would have with his or her patient. Interaction occurs by entering text on the keyboard.

The project focuses on using cinematic means to immerse the user in a situation as close to a real conversation with a patient as possible. The basic idea behind the project is the non-medical specific use of human communication, interaction between individuals, which is essential. This could be expanded on, for example, to incorporate narrative. "Talk-Movies" would be feasible, allowing the viewer to respond, in text form, to what is occurring in any space or even contacting the characters in a film, communicating directly with them.

DEFINING EFFICIENT INTERNET-LEARNING FROM COMMON E-LEARNING - A MOTIVATION FOR DESIGNERS OF LEARNING-TOOLS TO HAVE A CLOSER LOOK ON MEDIAS CHANCES AND CORRESPONDING LEARNING-TECHNIQUES.

Marco Rademacher Free Universität of Berlin

ABSTRACT:

E-learning is considered as the approach to facilitate and enhance learning by means of personal computers (PC), CDROMs, and the Internet. While CD-ROMs are used to demonstrate and to train by use of pc`s multimedia capabilities, this approach is also still dominating the construction of internet-based learning-tools such as learning-management-systems (LMS) [Schulmeister].

Although the Internet is a huge medium to store and transport knowledge of networked people [McLuhan], informational services like Usenet, Google and Wikipedia, or commercial services like Ebay and Amazon are considered successful, whereas LMS - built to transform information into knowledge - is widely unknown and unused.

The more sufficient services make use of a medium`s capabilities the more successful they are. In case of the Internet this means the use of public services, open standards, learner networking and the use of learner behavior from user profiles as criteria for rating and co-construction of learning materials. On the other hand, sufficient use of the Internet in learning context fits only corresponding learning techniques like constructivism-based cooperative, collaborative and self-determined learning [Schulmeister, Bruffee, Domke, Grune, McConnel]. It can be concluded, that internet-learning is not efficient by itself in any (institutional) learner organization. [Arnold, Kochan]

Solutions for successful internet-learning differ from current e-learning approaches. The shape of internet-learning has to be drawn more clearly. Only the combination of certain subjects, media, methods and organization leads to a successful learning synergy [Schulmeister, Tapscott].

COMETS is a simple but sophisticated tool for internet-learning: it networks readers of common online tutorials working on the same topic to facilitate cooperative learning - without changing a tutorial, just by use of tracing [COMETS, Rademacher]. The presentation of COMETS should open creators` minds for constructing new efficient learning tools und environments.