

EUCEET II 2005



ICT IN CIVIL ENGINEERING EDUCATION Special Project 6

30th September 2005

Dr. Ralf Reinecke
IBR, München



PREFACE

?-FORM

E-TOOLS

OBJECTIVES

EXAMPLES

HOW TO

SP 6 EUCEET II – Terms of reference

“Use of ICT in civil engineering education”

- Collect information from past experiences with ICT in education
- Benchmark current ICT application in civil engineering education
- Identify key points in reference to target and prospect of ICT
- Provide support for practical application

PREFACE

?-FORM

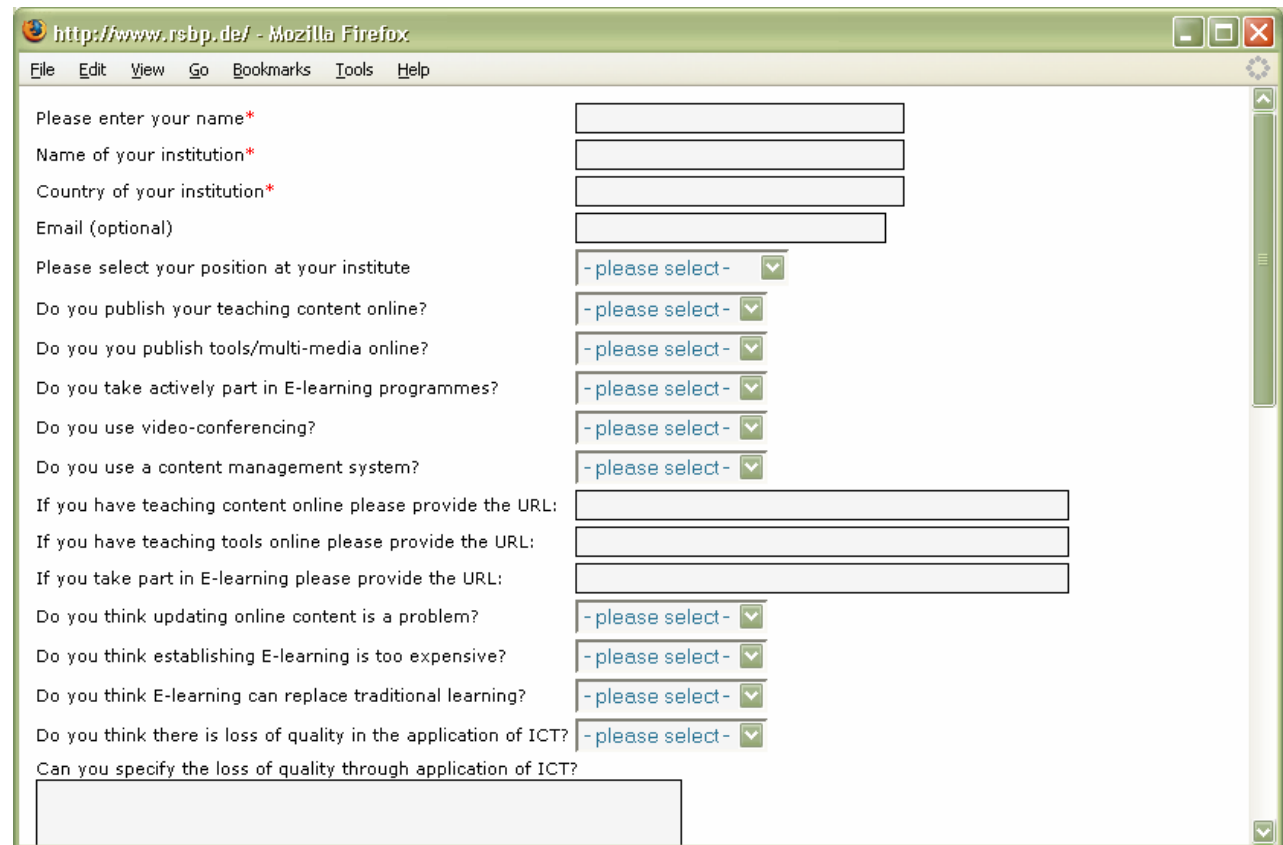
E-TOOLS

OBJECTIVES

EXAMPLES

HOW TO

ONLINE QUESTIONNAIRE (via rsbp.de)

The image shows a screenshot of a web browser window titled "http://www.rsbp.de/ - Mozilla Firefox". The browser's menu bar includes "File", "Edit", "View", "Go", "Bookmarks", "Tools", and "Help". The main content area displays an online questionnaire. The form consists of several text input fields, dropdown menus, and a large text area. The questions are as follows:

- "Please enter your name*" with a text input field.
- "Name of your institution*" with a text input field.
- "Country of your institution*" with a text input field.
- "Email (optional)" with a text input field.
- "Please select your position at your institute" with a dropdown menu showing "- please select -".
- "Do you publish your teaching content online?" with a dropdown menu showing "- please select -".
- "Do you you publish tools/multi-media online?" with a dropdown menu showing "- please select -".
- "Do you take actively part in E-learning programmes?" with a dropdown menu showing "- please select -".
- "Do you use video-conferencing?" with a dropdown menu showing "- please select -".
- "Do you use a content management system?" with a dropdown menu showing "- please select -".
- "If you have teaching content online please provide the URL:" with a text input field.
- "If you have teaching tools online please provide the URL:" with a text input field.
- "If you take part in E-learning please provide the URL:" with a text input field.
- "Do you think updating online content is a problem?" with a dropdown menu showing "- please select -".
- "Do you think establishing E-learning is too expensive?" with a dropdown menu showing "- please select -".
- "Do you think E-learning can replace traditional learning?" with a dropdown menu showing "- please select -".
- "Do you think there is loss of quality in the application of ICT?" with a dropdown menu showing "- please select -".
- "Can you specify the loss of quality through application of ICT?" with a large text input field.

PREFACE

?-FORM

E-TOOLS

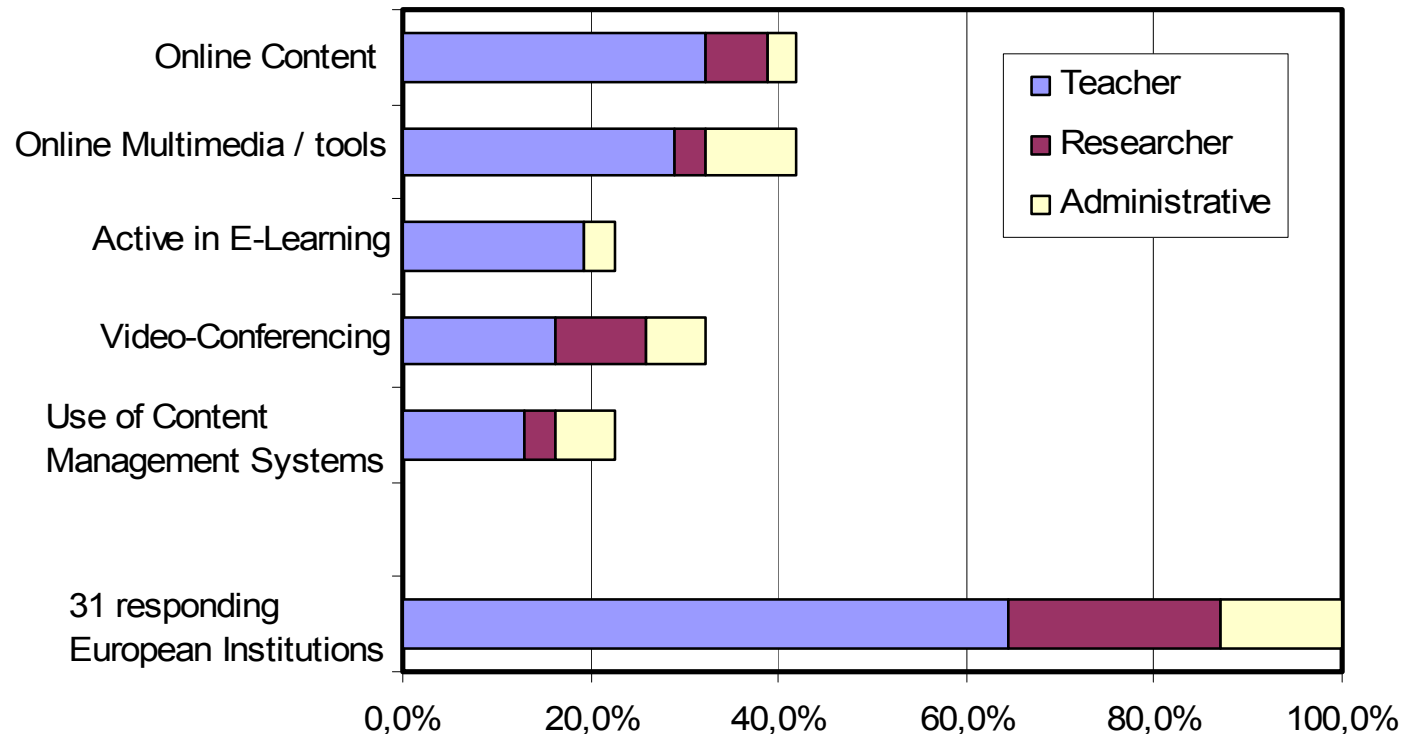
OBJECTIVES

EXAMPLES

HOW TO

RESULTS OF THE QUESTIONNAIRE

38 answers received from 31 institutions
from 18 different countries.



PREFACE

?-FORM

E-TOOLS

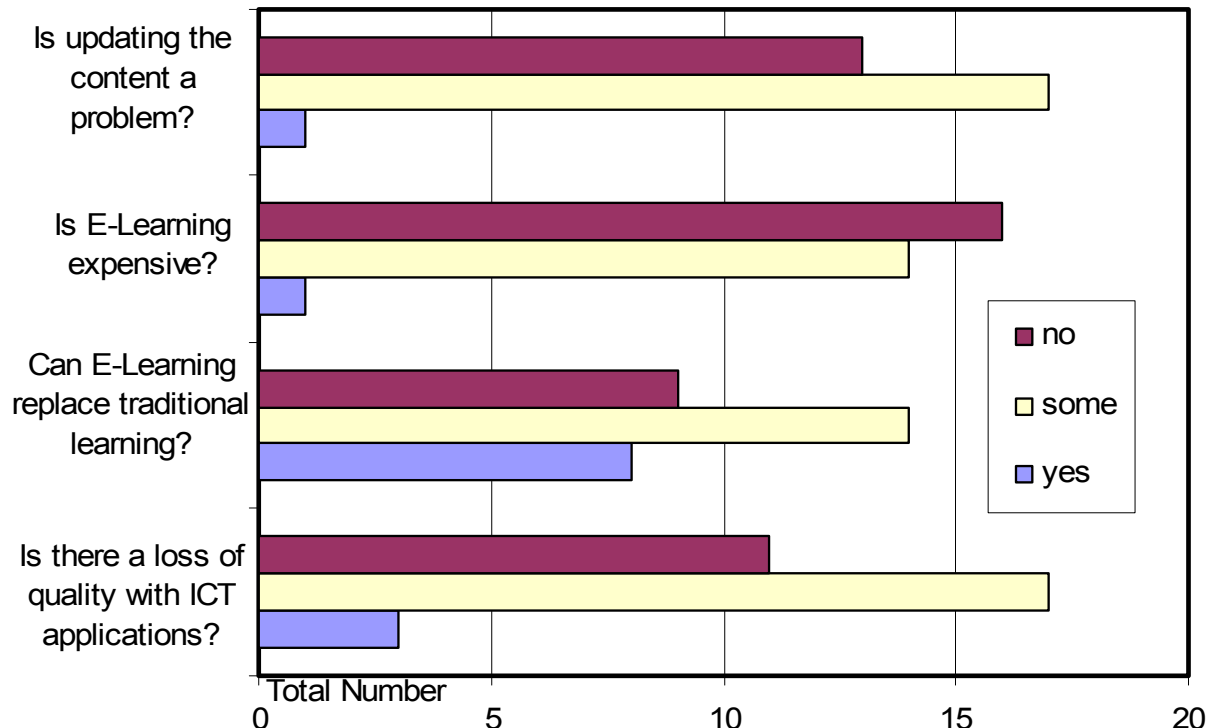
OBJECTIVES

EXAMPLES

HOW TO

RESULTS OF THE QUESTIONNAIRE

Opinions on key issues of ICT applications:



PREFACE

?-FORM

E-TOOLS

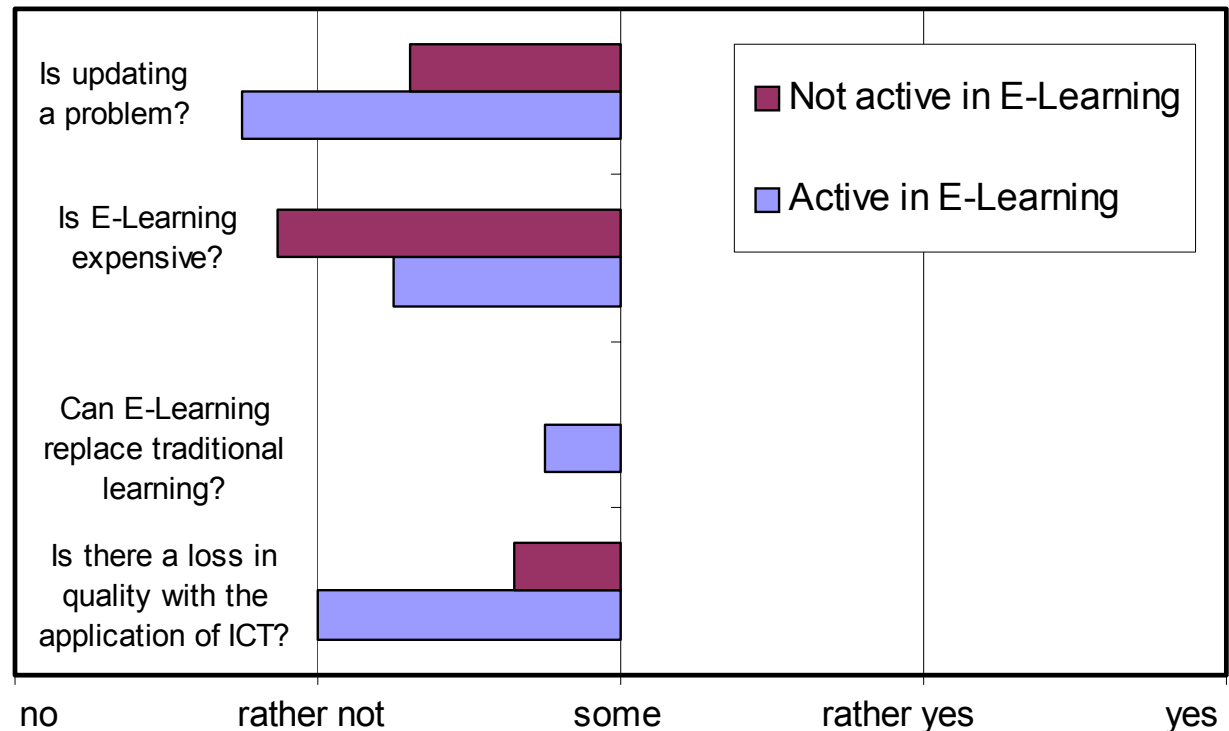
OBJECTIVES

EXAMPLES

HOW TO

RESULTS OF THE QUESTIONNAIRE

Opinions vary widely depending on the personal ICT experience:



PREFACE

?-FORM

E-TOOLS

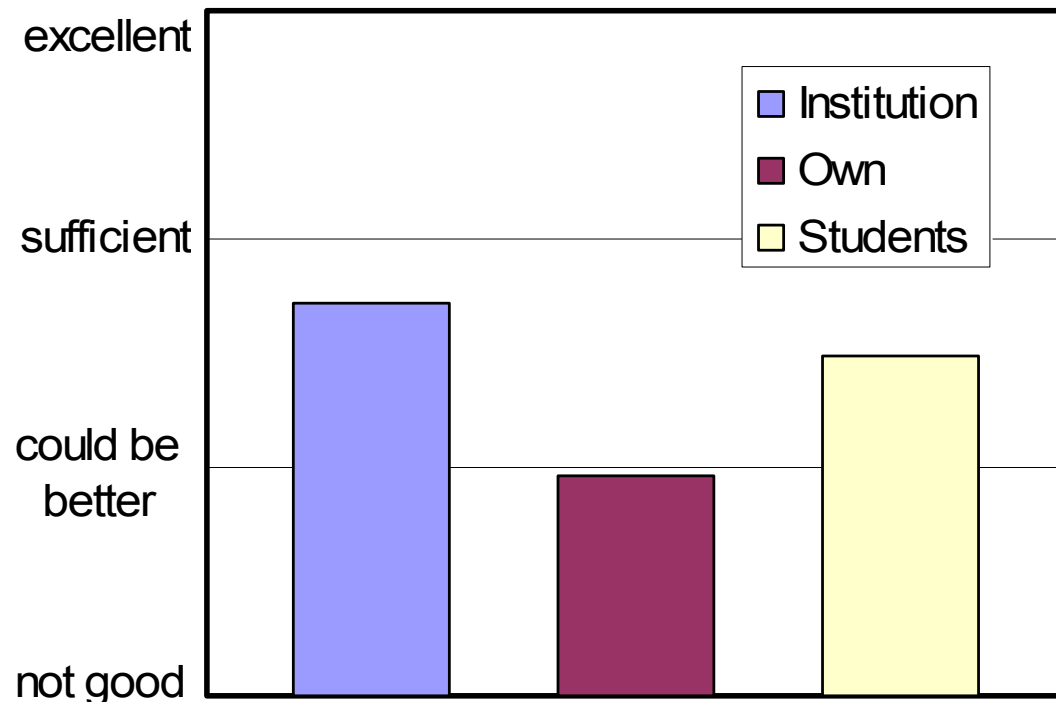
OBJECTIVES

EXAMPLES

HOW TO

RESULTS OF THE QUESTIONNAIRE

Flashlight on the ICT experience of people involved in the educational process:



PREFACE

?-FORM

E-TOOLS

OBJECTIVES

EXAMPLES

HOW TO

E-LEARNING

Support and enhancement of teaching and learning by modern information and communication technologies (ICT).

Effective and efficient learning

- Ease of access
- Independent of place and time
- Individual interactivity
- Student centered

PREFACE

?-FORM

E-TOOLS

OBJECTIVES

EXAMPLES

HOW TO

E-LEARNING TOOLS

- Web/Mobile based Communication
- Data Base
- Authorware
- Simulation and Gaming
- Assessment Tools
- Content Management Systems
- Learning-Management Systems
- Educational Blogging
- Wiki's

PREFACE

?-FORM

E-TOOLS

OBJECTIVES

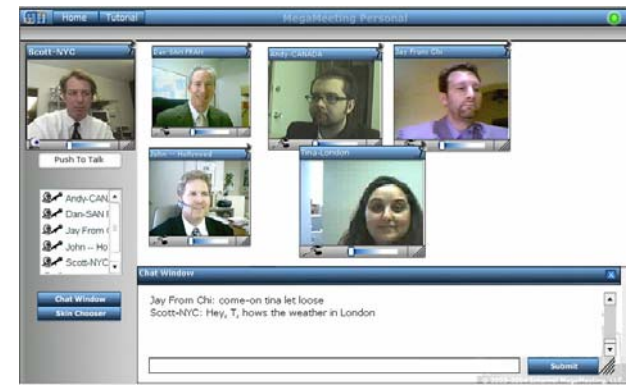
EXAMPLES

HOW TO

E-LEARNING

- Web based Communication

Sample screenshot from
www.megameeting.com



Advanced communication tools enabling video, speech or document real-time exchange between two or more people through a network.

Email, Forum, Messaging, Chatroom, Webcasting

PREFACE

?-FORM

E-TOOLS

OBJECTIVES

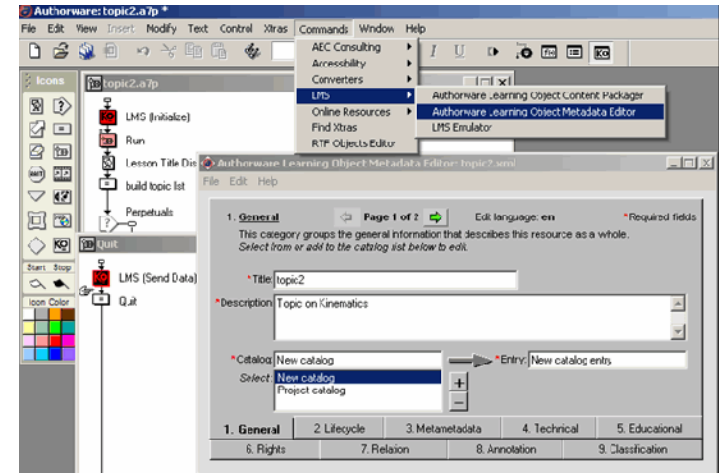
EXAMPLES

HOW TO

E-LEARNING

- Data Base

Sample screenshot from
www.website.com



Collections of facts or pieces knowledge with broad access and options for management, evaluation and searching

Content Catalogues, Galleries, Search Engines

PREFACE

?-FORM

E-TOOLS

OBJECTIVES

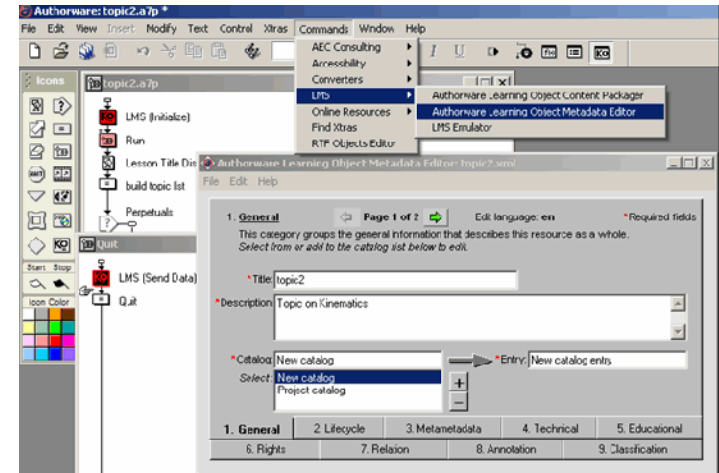
EXAMPLES

HOW TO

E-LEARNING

- Authorware

Sample screenshot from
www.macromedia.com



Systems to edit and develop multimedia (images, animations, simulations or exercises), interactive and dynamic course material and course navigation without special html- or programming skills.

PREFACE

?-FORM

E-TOOLS

OBJECTIVES

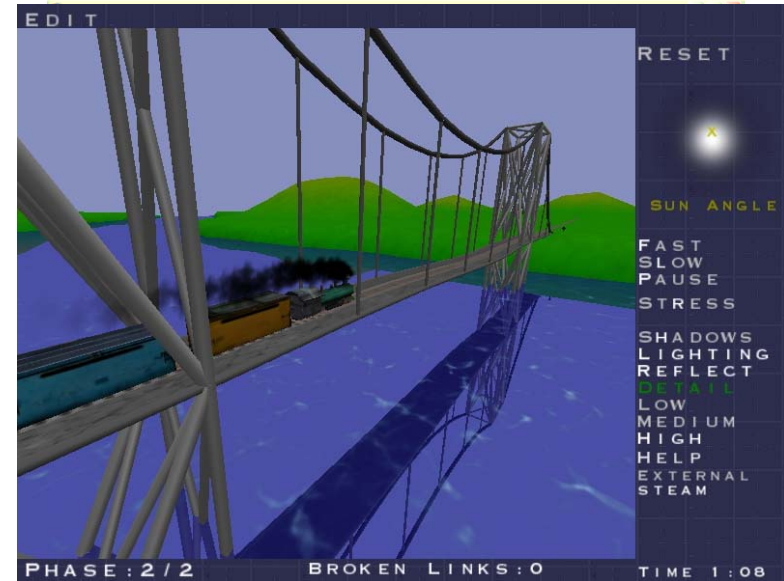
EXAMPLES

HOW TO

E-LEARNING

- Simulation & Gaming

Sample screenshot from
www.bridgebuilder-game.com



Computer generated virtual reality (synthetic environment) based on models allowing free or guided experiments to learn about attributes or correlations.

PREFACE

?-FORM

E-TOOLS

OBJECTIVES

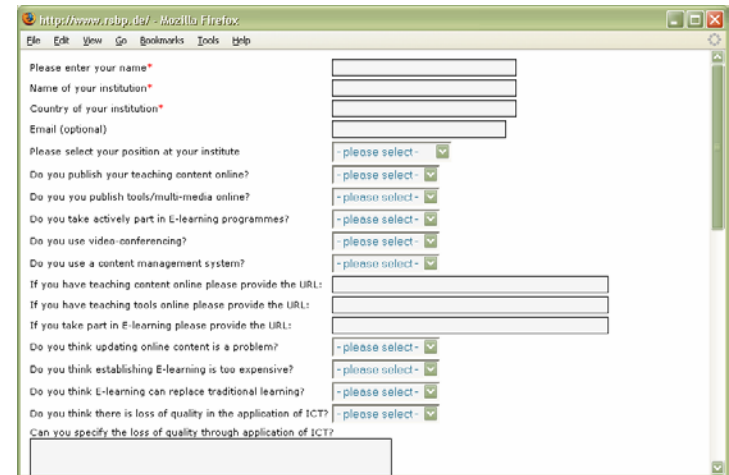
EXAMPLES

HOW TO

E-LEARNING

- Assessment Tools

Sample screenshot from
www.rsbp.de

A screenshot of a web browser window displaying an online assessment form. The browser's address bar shows "http://www.rsbp.de". The form contains several input fields and dropdown menus. The questions are: "Please enter your name*", "Name of your institution*", "Country of your institution*", "Email (optional)", "Please select your position at your institute", "Do you publish your teaching content online?", "Do you publish tools/multi-media online?", "Do you take actively part in E-learning programmes?", "Do you use video-conferencing?", "Do you use a content management system?", "If you have teaching content online please provide the URL:", "If you have teaching tools online please provide the URL:", "If you take part in E-learning please provide the URL:", "Do you think updating online content is a problem?", "Do you think establishing E-learning is too expensive?", "Do you think E-learning can replace traditional learning?", "Do you think there is loss of quality in the application of ICT?", and "Can you specify the loss of quality through application of ICT?". Each question has a corresponding input field or a dropdown menu with a "please select" option.

ICT assessment tools are able to provide “on the fly” feedback both for teacher and student and can be directly linked to data banks or profiling.

E-Questioning, Tracking, Surveillance

ICT IN CIVIL ENGINEERING EDUCATION



PREFACE

?-FORM

E-TOOLS

OBJECTIVES

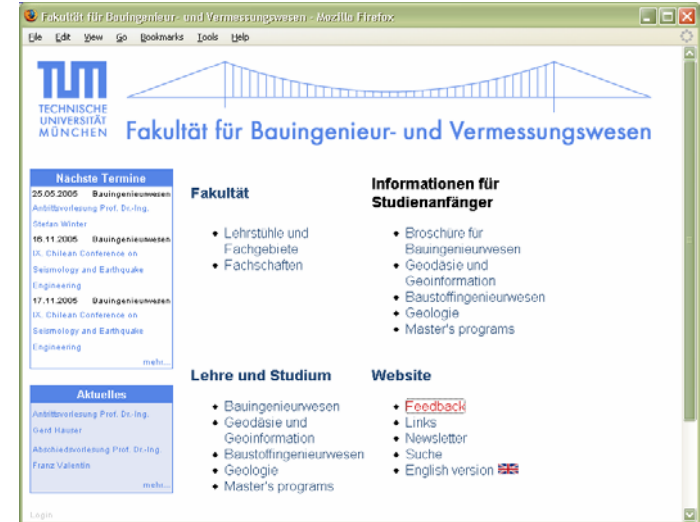
EXAMPLES

HOW TO

E-LEARNING

- Content Management

Sample screenshot built with
www.phpnuke.org



Teaching content libraries offering an exchange of course material.
Management tools organise and facilitate collaborative content creation.



PREFACE

?-FORM

E-TOOLS

OBJECTIVES

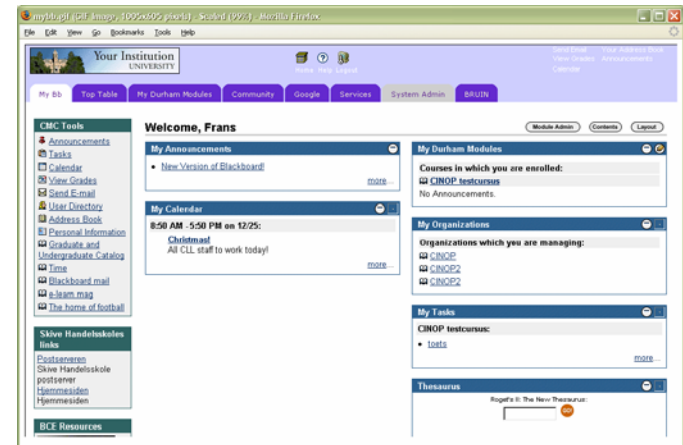
EXAMPLES

HOW TO

E-LEARNING

- Learning Management Systems

Sample screenshot from
www.blackboard.com



Software package combining competency management, skills-gap analysis, succession planning, certifications, virtual live classes, content management, content authoring, and resource allocation on a large scale.

PREFACE

?-FORM

E-TOOLS

OBJECTIVES

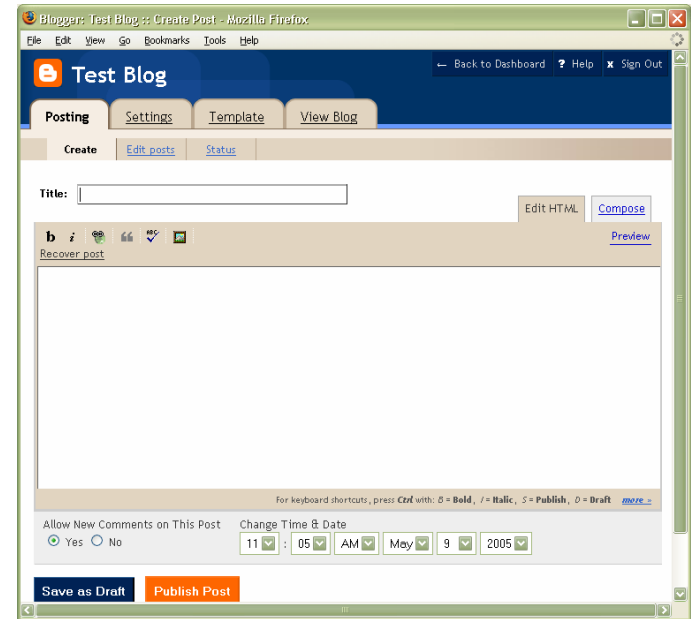
EXAMPLES

HOW TO

E-LEARNING

- Educational Blogging

Sample screenshot from
www.blogger.com



Numerous educational experts routinely publish their personal explorations in weblogs (or simply blogs = periodic time-stamped posts on a common webpage).

ICT IN CIVIL ENGINEERING EDUCATION



PREFACE

?-FORM

E-TOOLS

OBJECTIVES

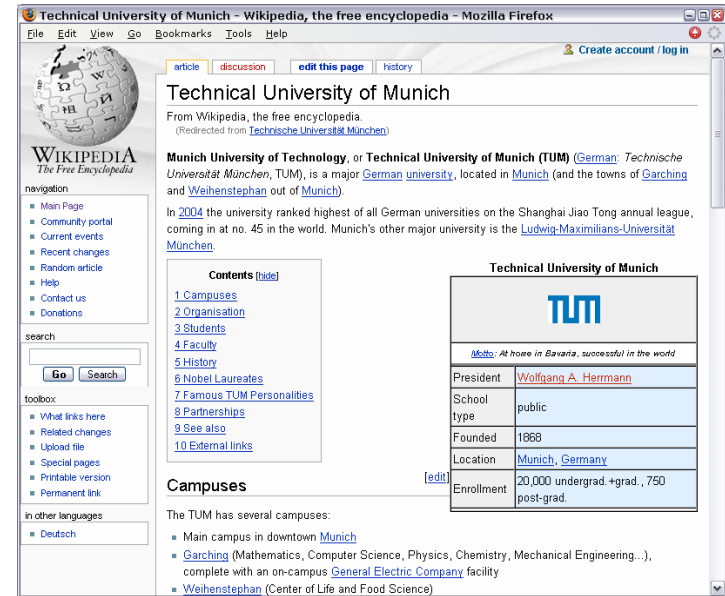
EXAMPLES

HOW TO

E-LEARNING

- Wiki's

Sample screenshot from
en.wikipedia.org



Wiki-systems allow the creation of encyclopedias on defined terms by enabling easy editing, linkage and discussion by open source or restricted authors.



PREFACE

?-FORM

E-TOOLS

OBJECTIVES

EXAMPLES

HOW TO

OBJECTIVES FOR A *STUDENT* IN CIVIL ENGINEERING

PRACTICAL EXPERTISE:

- CAD, CAM
- Virtual Simulations
- Communication tools

LEARNING STYLE & ENVIRONMENT:

- Interactive tools
- Availability of resources
- Student centred learning
- Independency of time & space

PREFACE

?-FORM

E-TOOLS

OBJECTIVES

EXAMPLES

HOW TO

OBJECTIVES

FOR A *TEACHER* IN CIVIL ENGINEERING

IMPROVED TEACHING:

- Management of learning behaviour
- Presentation, Interactivity
- Flexibility on time & efforts

EVALUATION:

- Direct individual feedback

COLLABORATION:

- Groupware
- Open source information
- Exchange on a global scale

PREFACE

?-FORM

E-TOOLS

OBJECTIVES

EXAMPLES

HOW TO

EXAMPLES OF GOOD PRACTICE

- **VIRTUELLE HOCHSCHULE BAYERN**
Collaborative E-Learning portal for all Bavarian Universities
- **LMS AT TU DELFT**
Application of the commercial LMS blackboard.com
- **LMS AT THE UNIVERSITY OF ZILINA**
Application of the open source LMS moodle.org
- **IT SUPPORTED TEACHING AT THE
UNIVERSITY OF LJUBILJANA**
Singular approach for special ICT supported projects

PREFACE

?-FORM

E-TOOLS

OBJECTIVES

EXAMPLES

HOW TO

VIRTUAL UNIVERSITY BAVARIA www.vhb.org

The VUB supplements courses available at Bavarian universities. By utilising an online platform, the VUB supports and coordinates the application of multi-media tools in education and training.

→ More effective courses

→ Fresh impetus into university education

PREFACE

?-FORM

E-TOOLS

OBJECTIVES

EXAMPLES

HOW TO

VIRTUAL UNIVERSITY BAVARIA www.vhb.org

Associated with all 9 Bavarian universities and 17 polytechnics as an interactive multimedia network

- Online lectures hosted by Bavarian professors
- Supervised courses developed by trained tutors
- Open free of charge to any student and lecturer of the Bavarian universities and polytechnics

PREFACE

?-FORM

E-TOOLS

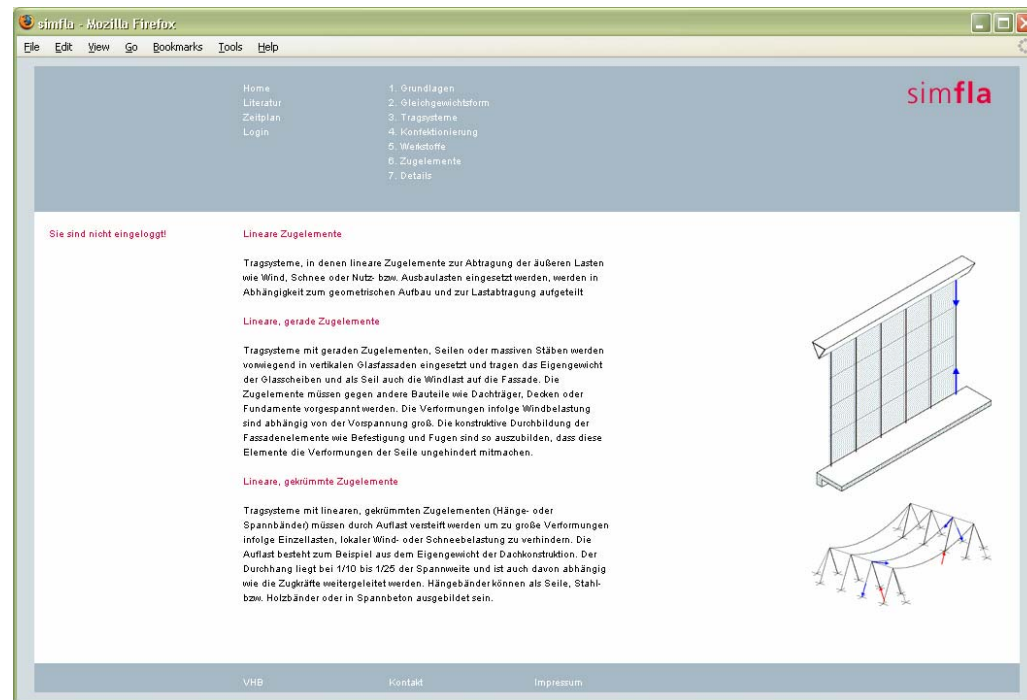
OBJECTIVES

EXAMPLES

HOW TO

VIRTUAL UNIVERSITY BAVARIA www.vhb.org

83 courses and 48 modules



Sample screenshots from course content

PREFACE

?-FORM

E-TOOLS

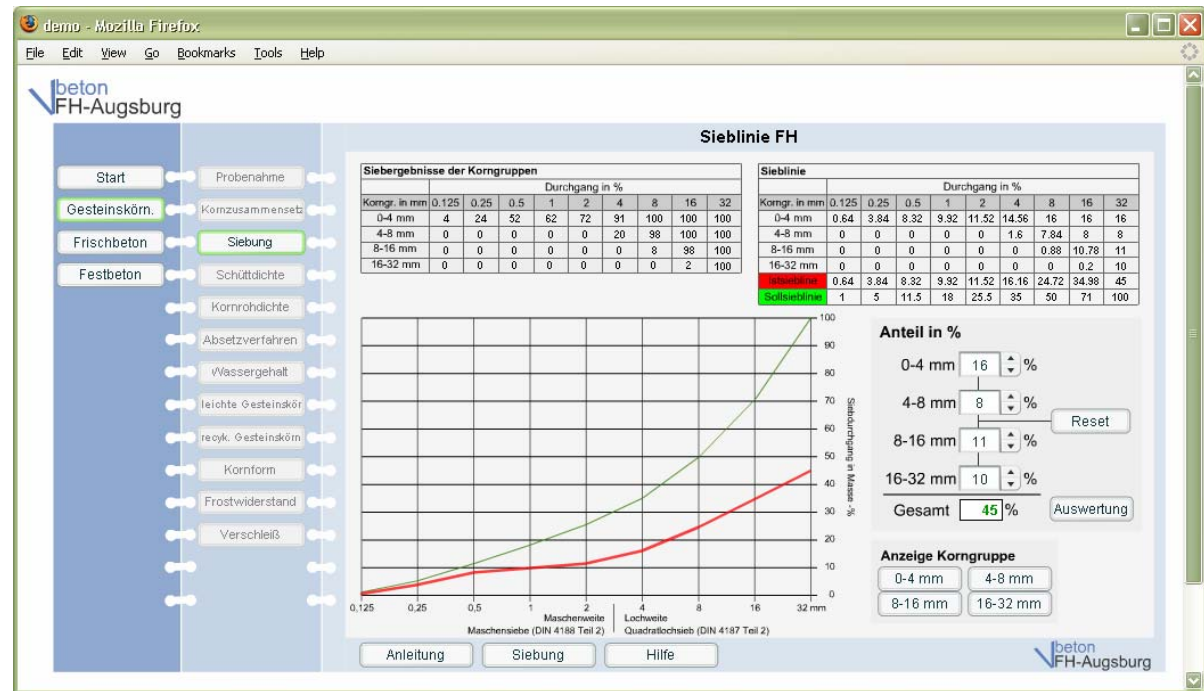
OBJECTIVES

EXAMPLES

HOW TO

VIRTUAL UNIVERSITY BAVARIA www.vhb.org

Additional tools and applications



Sample screenshots from course applications

PREFACE

?-FORM

E-TOOLS

OBJECTIVES

EXAMPLES

HOW TO

VIRTUAL UNIVERSITY BAVARIA www.vhb.org

Practical experience

- Continuous course program
- Accreditation according to general examination regulations (in person examination at the associated institution)
- Modules are part of the courses and as well in regular university teaching

PREFACE

?-FORM

E-TOOLS

OBJECTIVES

EXAMPLES

HOW TO

VIRTUAL UNIVERSITY BAVARIA www.vhb.org

Costs and benefit

- Financed with 11,2 million Euro during the launching phase
- Budget of 3,6 million Euro per year for 2000 to 2002 paid by the state (confirmed until 2006)
- Approx. 10.000 students are currently using the course programmes

PREFACE

?-FORM

E-TOOLS

OBJECTIVES

EXAMPLES

HOW TO

REQUIREMENTS

STUDENTS

- Expertise in technology
- Active learner
- Sufficient system requirements

INSTITUTION / TEACHERS

- Expertise in technology & design
- Cost of developing
- Sufficient system requirements
- Global competition

PREFACE

?-FORM

E-TOOLS

OBJECTIVES

EXAMPLES

HOW TO

PROPOSAL FOR AN IMPLEMENTATION

- Define your goals
- Know your starting point
- Start with the next most simple steps
- Use consistent and common tools
- Acceptance of essential investment, time and first failures
- Create a good support

PREFACE

?-FORM

E-TOOLS

OBJECTIVES

EXAMPLES

HOW TO

“The ghosts I called I can't get rid of now”



Goethe's sorcerer's apprentice / www.disney.com