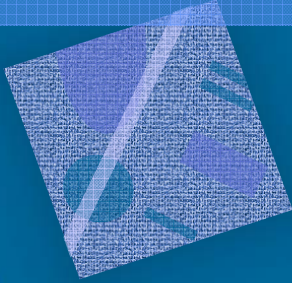


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Design and Implementation of Web Courses



Web Course
Course Components
Course Design
Material Production

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Web Course

- Some significant part of the course in Web
 - what is significant enough?
- Traditional lecture course components
 - information, lecture slides, home works, exams
- Other course components
 - team projects, student collaboration, etc
- Web course components
 - web lectures, team project communication tools
 - chat rooms, web blogs, etc.

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Web Course

- Some significant part of the course in Web
 - what is significant enough?
- Something more than just replacing bulleting board with Web page
 - Not just
 - course information, lecture slides
 - home works, exam results
 - But also
 - simulation tools, computerized feedback problems
 - web lectures, web books
 - interactive net discussions, team work with web tools
 - etc. etc.

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Why Web Courses

- Paradigm change
 - In near future, more and more teaching and learning will be done with Computer and Web Based Learning (CBL, WBL)
- Industry has been doing it for more than 10 years
- Universities are now in transit
 - Univ Helsinki, Virtual University Strategy 2003-2006
 - Information and Computer Technology (ICT) widely used in research, teaching and studying
 - vision: one third of courses utilize web in 2006
 - Finnish Virtual University
 - 21 Finnish Universities + Ministry of Education
 - Coordination of web-based university education in Finland

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Other New Learning Methods

- Many other new learning methods taken into use simultaneously
 - Problem-Based Learning, Student-Based Learning
 - Discovery-Based Learning, Engaged Learning
 - Collaborative Learning, Cooperative Learning
 - Self-Directed Learning, Case-Based Learning
- Tangential to Web Based Learning
 - some of them may use Web
 - some of them work real well with Web
 - some of them do not need Web at all

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Course Components

- Traditional (lecture) course components (E.g.)
 - lecture slides
 - lecture ← learning component
 - individual homework definitions
 - team project definitions
 - student/team papers on home works/projects ← learning component
 - instructor evaluation for student/team papers grading?
 - practice session for homework ← learning component
 - exam grading?

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Web Course Components

- Mixture of traditional components and web components
 - E.g., normal lectures but team work in web
- Almost all traditional components can be transmitted via web
 - course information given in web page
 - lectures streamed live via web
 - student teams communicate only via web
 - home works returned with web tools
 - student feedback via email

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Web Course Components (contd)

- New types of components made possible by the web
 - team work communication via web
 - collaborative document writing
 - web lectures, web books
 - automatic homework evaluation and feedback
 - with bookkeeping, may affect grades
 - without bookkeeping, just for self-evaluation
 - web exams in exam terrariums
 - fixed time, fixed questions
 - selective time, randomized questions

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Web Component Examples

- Web lecture
 - streamed or taped remote lecture OSCU, Starbak
 - is this just “videotaped lecture”
 - edited web lecture
 - use actual video clips, PP-slides, sound bites to create an instructive new product
 - web book that may be viewed in a similar fashion than a live lecture
 - production team or at least good product development software (e.g., Authorware)

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Web Component Examples (contd)

- Collaboration tools
 - email
 - often quite enough
 - Wiki MoinMoin, UsemodWiki, TWiki, ...
 - web pages that anyone (authorized) can edit
 - discussion forums Dyn3W, YaBB, phpBB, ...
 - should be closed to students in this course
 - web blogs BlogGer, QloGer, ...
 - original use mode: just one author
 - web video/phone calls NetMeeting, Skype
 - video, voice, conference call
 - chat, whiteboard

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Web Component Examples (contd)

- Computerized feedback problems
 - interactive practice environments
 - simulations
- simulation environment
- expensive to build?
- try out new things in safe environment
- automatic feedback on student work
- examples
 - review, self-test problems xml-scripts (UHelsinki)
 - data base queries Trainer (UHelsinki)
 - assembly language programming eAssari (UHelsinki)
 - operating systems modifications?

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Web Component Examples (contd)

- Interactive web lectures, or web book
 - view it like a lecture
 - browse it like a book
 - designed originally for web use
 - expensive to produce

IBM Knowledge Factory, Macromedia Authorware

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Web Course Design

- What is the goal?
 - what do we want students to learn?
 - certain topic? team work? learning methods?
- Why do we want web components?
 - do we want web components? what type components?
- Criteria to select web components
 - time/location independence?
 - remote learning? class size?
 - save money/time?
 - better teaching/learning methods?
 - which learning method to use?

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Web Course Contents

- It took hundreds of years to select current “traditional” lecture course modules and structure
- It will take at least tens of years to select good web course modules and structures
 - 1st 10 years have gone already
- Experiment and try new approaches
 - make mistakes and weed out bad components
 - continue to use good components
 - keep good records of your experiments
 - experiments take long time (months, years)
 - experimenting is expensive (time, money)

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Learning Platform

- WebCT, Lotus Learning Space, Moodle, BSCW, HTML, ...
- Select to support this course structure
 - platform/module dependencies?
- Use many platforms?
 - HTML for std course information
 - BSCW for group work?
 - linked to each other?

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Selecting Components

- Be conservative, build on experience
- Experiment with new ideas
 - it is OK to fail, but find out why
 - experiment with components, not whole courses
- Problem areas
 - not enough supporting infrastructure
 - the tool selected was not so good, because ...
 - students used too much time to learn new tools
 - any little simple thing
 - expectations were too high
- “Hurry up slowly” - make steady progress

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Web Material Production

- Depends on module type
 - many modules have no material production
 - blogs, wikis, collaborative work tools
 - use instruction do not count here
- In house production
 - need to allocate instructor time for production
 - instructors may need supporting courses
 - flash, etc
- Co-operative work with other universities
 - does it match our requirements?
- Purchase from external source
 - does it match our requirements? cost?

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Web Material Examples

- Video lecture
 - live broadcast? archived broadcast?
 - editing?
 - OSCU – Open Source Courseware
 - 2 screens: lecturer and slides/chat
 - live broadcast to 2-3 other universities
- Web lecture notes
 - covers all course material, intended to support traditional lectures
 - suitable also for independent study
 - Java programming

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Web Material Examples (contd)

- Web Book
 - IBM Knowledge Factory Team
 - 10-30 person professional team
 - mature education business
 - Macromedia Authorware software
 - 1 instructor with multimedia workstation
- Computerized feedback problems
 - platform dependent (e.g., WebCT)
 - home grown (e.g., xml)
 - students can create new ones in team projects

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Web Material Examples (contd)

- Simulation environments
 - SQL-Trainer
 - eAssari (Autumn 2005)
 - generic higher level interface to many different simulation environments
 - many problem types: multiple choice, fill in blanks, ...
 - automatic assessment
 - SQL queries
 - assembly language programming
 - students may develop new assignments in team projects

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Design and Implementation of Web Courses

- Set goals and select learning methods
- Select learning modules & learning platform
 - web & traditional
- Create new learning material if needed
 - E.g., PowerPoint slides for traditional lectures
 - E.g., web lectures for independent study modules
- Create new course in selected learning platform
 - rigid schedule for web components
- Run and manage the course
 - keep lectures, track students, respond to blogs, update wiki instructions, organize and grade exams, etc

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Summary

- Can have (only) incremental change to current way of designing new courses
- Consider using web components with your course
- Consider developing web material
- Keep track on all experiments
- Paradigm shift towards computer and web based learning (CBL and WBL) in university education is happening right now
- CBL and WBL support also other new learning methods

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