

EOUIS

LEARN@WU 10 Years of E-Learning in the Large

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WU: Vienna University of Economics and Business



- University = "Business University"
- One of the largest Business Universities worldwide
 - about 25.000 students in total
 - more than 4.500 freshmen each year
 - more than 5.000 different courses per year
- E-Learning @ WU:
 - Full content coverage on the first year of study (120.000 learning materials)
 - E-Learning in the Large



E-Learning as a Necessity



Background

- Free access to public Universities in Austria
- Fixed Budget, Fixed Resources
- Number of freshmen increased from 2001 to 2002 from 3.000 to 4.000
- University
 - completely overcrowded,
 - Renting cinema centers,
 - hiring security personnel to limit access to Audi.Max.
 - ...
 - Applied for a extra public grant from Ministry

Vision:

- New curriculum for all study programs
- Streamlined courses and organization (0th semester, half-semester, winter/summer University ...)
- Based on E-Learning, but no pure distant learning





Learn@WU



From Project to Infrastructure:

- 2002: Initial Launch, Content Project, based on OpenACS (Learning Content Management System)
- **2003:** E-Learning became strategic goal of the University, member of *DotLRN Consortium*
- 2005: E-Learning part of general Trainee Programmes
- **2006:** Development of an E-Learning Academy
- 2008: Full coverage of all courses (~5000/year) Improving integration with the Campus Management System
- 2010: Wiki, Mobile Learning, Streaming Content Delivery
- **2012:** Plagiarism Checking, Mobile Clicker, Learning Workflows

Total Staff:

Currently 41 people employed, more than 250 content developers









Current Key Figures of Learn@WU

High Acceptance

- Developed more than 120.000 learning resources
- More than 25.000 registered members
- Students solve up to 600.000 interactive exercises per day online
- 60% sessions > 10 minutes, 22% > 1h
- More than 500.000 class-room exams prepared/corrected via Learn@WU (via mark-reader)
- "Without Learn@WU, the operations of our university would not have been possible" (Christoph Badelt, President of WU)
- Technical Figures
 - Up to 15 Mio hits and 3,3 Mio page impressions per day from registered users
 - Average response time on views less than 0.05 sec
 - Up to 2.500 concurrent users, over 250 views/sec
 - Up to 235 GB/day delivered content

Current annual growth rate: ~20%

One of the worlds **mostly intensively used** E-learning platforms





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Two Years Analysis



Continuous development:

- Page Views more than doubled
- Response Time three times better

Although:

- Same Machine
- More Data
- More complex Queries
- Workflows

Reasons:

- Monitoring, Selective Tuning, Software Engineering, Open Source





Sample day: Active Learners



Sample day:

- Yesterday: Oct 3rd
- Courses start Oct 8th

Midnight:

- 600 active users
- ~ size Audi.Max

"Active"

- Click within 5 minutes
- Just authenticated users

Max Values:

- Up to 2.500 concurrently
- Up to 15.000 users login per day





Success Factors (1)



E-Learning integrated with curriculum

- Study programs in first year built around E-Learning
- E-Learning more than an optional add-on

Institutional support from University

- Project Pool (from 10h/semester to 40h/year)
- Various kinds of E-tutors
- E-Learning Academy (courses, trainee-programs, support)
- Infrastructure Team (5 people)
- Integrated with Campus Management System

Human-Centred Platform-Design

- University as a "community of communities"
- Communities composed of
 - Groups of students, classes, courses, programs, alumni, ...
 - Members and administrators (decentralized management)
- Shared Design and Responsibility
- High adaptability by community owners





Success Factors (2)



Support of the full E-learning development cycle

Content Creation

- Mostly interactive content, different granularity
- Most content developed by domain experts via Microsoft Office Tools

Content Delivery

- Interactive exercises for training and self-assessment
- Organization via Concept Space for easy navigation and recommender system
- Concept Space is a knowledge map for students to track their learning-progress
- Lecturecasts

Content Assessment

- Integration with a mark-reader for class-room exams
- Exams 3 times per semester 20 subjects × 1000 students

Result Communications

Personalized Web Interface, PDF-Generation, SMS Integration



Example: Lecture Casts as a Means for Low-cost Lecture Sharing





Lecturecast





- Recording of Presentations in large Lecture Rooms
- Highly automated (Touchscreen to record)
- Automated splitting at Slide changes, search integration
- Teachers decide delivery methods

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- streaming
- video-podcast (subscription)



Success Factors (3)



Highly scalable Platform

- Fully based on Open Source software components
- OpenACS (Community Framework),
- DotLRN (Course Management + Collaboration tools)
- PostgreSQL, AolServer, XOTcl

Integration with e-learning Research

- Technical Lead at the Institute of Information Systems and New Media
- Actively participating in many EU Research Projects
- Founded University Spin-off Knowledge Markets



KNIIIWLEDGEMARKETS



Sample Projects



- Prolix (EU)
 - Workplace Learning, learning alignment with business processes
- LtFLL(EU)
 - Advanced Text Mining for E-Learning applications (Grading support, Recommender Systems, ...)
- Role (EU)
 - Social Networking in E-Learning Systems
- iCoper (EU)
 - Open Contents, Learning Outcomes, Competencies
- Bildungsserver Burgenland, LMS.at (Gov.)
 - E-Learning support for Schools (more than 30.000 users)
- Daimler (Company)
 - Knowledge Management along a supply chain Management System (several thousand supplier)





DAIMLER



Some Benefits



Organization

- Cost reduction:
 - Instead of up to 50 parallel courses/semester typically up to three
 - What does it cost to evaluate 500.000 exams?
- Content improvement through transparency and learning analytics
- Platform as a means for improving teaching core processes (e.g. plagiarism checking)
- Image driver (positively noted in equis accreditation)

Teacher

- Reduce workload (e.g. exams, result communication, use students as resources)
- Improve student satisfaction

Students

- More free leaning materials
- Higher transparency, uniform appearance
- Continuous learning and self-development





