Institutional efforts to improve the quality of modern teaching

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Overview

- Early efforts (1975-2000)
- Exploration (2000-2006) ETH World, Fonds Filep, ETHplus
- (Re-)Orientation (2005-2007) New Strategic Focus
- Outlook
Early efforts

XS-0 School Computer (1975-1980)
Swiss PTT Videoconferencing for Teaching and Research (ca. 1987)
Telepoly (1993 – today)
The XS-0 interactive school computer (1977)
Significance of the XS-0 project

- Research project
- Focus on methodology of learning and teaching
  - Authoring system and nucleus of an LMS
  - Interactive, use of graphics
- Institutional aspects
  - Dissemination among teachers (Gymnasium)
  - Student group created and encouraged by the researchers
  - Commercialization (failed)
- Lesson learned: Huge effort needed to create content!
Swiss PTT Videoconferencing for Research and Teaching

- Initiative by Prof. Heinrich Ursprung, President of ETH (ca. 1987)
- Videoconference studio run by Swiss PTT located in the ETH Main building
- Goal: Support remote collaboration in research, and teaching remote students
- Project failed
  - Absence of suitably equipped and interested peers
  - Complexity of technology and operation
Telepoly

- Suggested and funded by Prof. H. Ursprung, Director Gruppe Wiss. & Forschung (ca. 1993)
- Technology developed in collaboration of ETH and EPFL
- High-performance synchronous remote teaching
- Beta test: Distributed colloquium ETH/EPFL in 1995
- First lecture given to my ETH students from EPFL by Prof. Le Boudec in 1996
- In routine use today between ETH and Univ. Basel
- \( \rightarrow \) NET at ETH 1996/97!
Exploration 2000-2006

- ETH World
- ETHplus
- Fonds Filep
Motivation

- Globalization and internationalization in higher education → worldwide competitive market
- We compete for excellent graduate students, faculty, research projects
- Importance of life-long learning
- Extension of physical space impossible or expensive
- New challenges, but public funding not really increasing

➢ Novel uses of information and communication technology (ICT) as a strategy for the future
ETH World: A strategic initiative

- Enabling communication and co-operation independent of time and place
- To build a virtual space, interfacing and co-existing with the physical space
- Accessible for all stakeholders
- Broader scope than “just” e-learning
Virtual campus extending and interfacing to the physical locations

- Create new and innovative services
- Improve access to ETH services
- Facilitate cooperation with external partners (the “world”)
ETH Life – the daily web journal

www.ethlife.ethz.ch
Vireal Lab – the virtual-real lab

- Linking virtual and real world
- Intelligent “roomware” for team teaching and learning
- Collaborative work, discussion and learning
- Interactive seminars and colloquia with external partners
- Visualization and manipulation of 3D objects
Videoconferencing

- Make videoconferences as ubiquitous as phone calls
- From personal to large-group videoconferences
- Infrastructure: Hardware recommendations, software licenses, conference bridges, scheduler
- Training, support, helpdesk

www.vc.ethz.ch
Laptops for Students

- Mobile computing with wireless LAN
- Promote computer use and literacy of students
- Integration of privately owned and operated computing equipment into ETH infrastructure
- Create infrastructure for new methods in teaching and learning

→ A large number of new student workplaces
Fonds Filep (from 2000)

- Funds for fostering innovation in teaching
  - New technologies or new approaches in learning/teaching
- Appr. 15-30 proposals per year, 50% acceptance rate
- Ca. 110 projects (several co-funded with SVC)

- Supervision and evaluation: Studienkommission ETH
- Consulting: Filep team/NET
- Administrative management: Staff of the Rector
- Funding decisions: Rector
ETHplus (from 2005)

Recognized need for a paradigm shift:
„From the lone ranger to the dream team“

- Autonomous small team
- Individual achievement
- Solution for single problem
- Local processes
- Shooting star project

Goal:

- Well managed project
- Achievement of an organization
- Solution framework
- Process integrated in existing environment
- Sustainable product
Challenges

- Increased complexity
  - Content, organization, technology
- Significant effort (and return) for cooperation
- Initial uncertainty as experience from pioneer projects not applicable
- Community-building among department members / stakeholders of the curriculum required
- Need to establish links with university administration and services
The ETH-Plus project Mobility Matters supports the Bologna structure ...

... by helping to close gaps in prior education and learning material

... with attractive information offerings

... with self-evaluation tools

... as a framework for the re-use of teaching and learning material
(Re)Orientation 2005-2007

- E-Learning Strategy
E-Learning strategy: The vision

- **Easy access** to on-line resources for students; **effective support** for lecturers.
- Excellence in teaching and learning: E-learning where **additional value** is created.
- Innovation through expertise: Monitoring of ICT developments and **creation of innovative products**.
- Achieve synergies with internal and external networks and **partnerships**.
Strategic goals

- **E-learning offerings**
  1. Unified presentation of learning units and on-line resources for each curriculum
  2. ETH positions itself in the market for **continuing education** (if market study indicates good opportunities)

- **Production of e-learning material**
  3. Production and dissemination of e-learning material is done professionally
  4. All interested lecturers are educated to use e-learning
  5. Centralized and de-centralized network of supporters is established

- **Marketing**
  6. E-learning offerings are known by all stakeholders and partners

- **Reflection**
  7. Systematically check whether we are on the right track
The business model

Development

Exploitation in the University and for Marketing

Enabling services

Quality assurance

Acquisition of know-how
Roles and coordination of stakeholders

- Assistants
- Doctoral students
- Students

Content Implementation

- Requirements
- Consulting
- Technical support

Central support
- Expert knowledge
- New services
- Out/Inreach

Education Feedback from practice

Departmental supporters
- Didactical
- and technical
- knowledge

Computing Services, educational support services, administration

Requirements Consulting Help with implementation
Outlook
Proceed with the process of change

✓ Strengthen central support processes
✓ Re-focus the innovation funds (Filep)
❖ Strengthen de-centralized support: Departemental e-learning supporters
❖ Define QA processes
- Do a market study on continuing education
- Develop open content concepts
- Develop external partnerships
- Involve students
Departmental supporters (Departementspezialisten)

- **Construction and Geomatics**
  - Architecture
  - Civil, Environmental and Geomatics Engineering

- **Engineering Sciences**
  - Mechanical and Process Engineering
  - Inf. Technology and Electrical Engineering
  - Computer Science
  - Materials
  - Management, Technology and Economics

- **Natural Sciences and Mathematics**
  - Chemistry and Applied Biosciences
  - Biology
  - Physics
  - Mathematics

- **System-oriented Sciences**
  - Earth Sciences
  - Environmental Sciences
  - Agricultural and Food Science

- **Humanities, Social & Political Sciences**
  - Humanities, Social and Political Sciences
  - Chemistry and Applied Biosciences
  - Biology
  - Physics
  - Mathematics
  - Earth Sciences
  - Environmental Sciences
  - Agricultural and Food Science
Innovative teaching Scenarios

- Max. 15 kFr. to implement innovative ideas
- Vision: Broadening deployment of eLearning with a pedagogical focus
- Good response: 18 proposals with high quality
Further issues for implementation

- I-Lab: systematic innovation management
- ETHplus: further projects?
- Partnerships
Questions? Discussion!