FLOP or TOP:
Experiences with E-Learning in Academic Education

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• E-learning at BOKU and IVFL
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Introduction

• Knowledge is the fourth production factor of a modern national economy (labour, land/resources, capital)

• Education and training are the fundamental ingredients for the development of the resource Knowledge

• Knowledge is not a privilege for industrialised countries

• Research organisations and education institutions are in charge for the development and the transfer of Knowledge

• Research and educational bodies have to adapt their course programs to the demand of specific fields of profession and they have to introduce modern teaching technologies
E-Learning: Definition

- „Approach to facilitate and enhance learning using computer, appropriate software and modern communication technology“
- E-learning is more than a technological tool for providing existing learning resources online
- E-learning must be seen as a pedagogical mean for enhancing the learning environment (Veenendaal et al. 2005)
E-Learning: Potential

Potential of E-Learning can be characterised by three aspects:

• Other teaching and learning methods can be applied
• Increased flexibility of time and of place offer a better organisation of learning
• A shorter study time can be achieved

(Kerres 2004; Frohmann & Phan Tan 2005)
Learning Concepts

Conventional Teaching
• Face to Face Teaching

E-Learning
• Distance Learning
• Blended Learning
Learning Concepts

Conventional Teaching (Lectures, Seminars, Exercises, Field Trips, Projects, etc.)

• Face to Face Teaching
Learning Concepts ... cont.

E-Learning (Video, Forums, Simulations, Hypertext, Projects, Quizzes, etc.)

• Distance Learning
Learning Concepts . . . cont.

E-Learning

• Blended Learning (sequential)
Learning Concepts ... cont.

E-Learning

- Integrated Learning (parallel and networked)

Blended pedagogic (Oliver & Trigwell 2005)
University of Natural Resources and Applied Life Sciences (BOKU Vienna) - Figures

- 5500 students
- 500 teaching staff
- Fields of studies:
  - Land and Water Management
  - Environmental Sciences
  - Agricultural, Forestry and Wood Sciences
  - Biotechnology and Food Technology
- Courses (Curricula)
  - 9 Bachelor study courses
  - 19 Master study courses
Teaching at the Institute of Surveying, Remote Sensing and Land Information (IVFL)
E-Learning at IVFL

Motivation

• Saving teaching time in the lecture hall (up to 10 parallel groups due to high number of students)

• Harmonisation of knowledge (due to the different pre-university education of students)

• Surveyors are TECHNO FREAKS

Experiences with e-Learning since 2001
# E-Learning Supported Courses at IVFL

<table>
<thead>
<tr>
<th>COURSE</th>
<th>Credits</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surveying for Landscape Architecture and Planning</td>
<td>2.0 ECTS</td>
<td>160</td>
</tr>
<tr>
<td>Geo-Informatics</td>
<td>4.0 ECTS</td>
<td>30</td>
</tr>
<tr>
<td>Surveying and Mapping</td>
<td>1.0 ECTS</td>
<td>20</td>
</tr>
<tr>
<td>Geo-Data-Management</td>
<td>3.0 ECTS</td>
<td>15</td>
</tr>
<tr>
<td>International Land Management</td>
<td>2.0 ECTS</td>
<td>5</td>
</tr>
<tr>
<td>Remote Sensing and GIS in Natur. Resource Mngmt.</td>
<td>3.0 ECTS</td>
<td>20</td>
</tr>
<tr>
<td>Surveying for Environmental Engineering</td>
<td>3.0 ECTS</td>
<td>112</td>
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<tr>
<td>Location and Navigation Using Satellites</td>
<td>3.0 ECTS</td>
<td>25</td>
</tr>
<tr>
<td>Remote Sensing</td>
<td>2.0 ECTS</td>
<td>112</td>
</tr>
<tr>
<td>Geographical Information Systems</td>
<td>1.0 ECTS</td>
<td>160</td>
</tr>
</tbody>
</table>
Application of E-Learning at IVFL

Levels:

- Face to face teaching (provision of course materials)
- Blended learning
- Distance learning
- Online examinations and self assessments
E-Learning – Level 1:
Provision of Course Materials

E-learning tools used:

• Delivery of news (e.g. change of dates for course, meeting points)
• Delivery of teaching documents (presentation slides, textbook)
• Board for the announcement of examination results
E-Learning – Level 2: Blended Learning

E-learning tools used (additional to Lev.1):

• Discussion forums (teacher ↔ students, students ↔ students)
• Online chat
• Self assessment quizzes to harmonise the knowledge of students
• Links to web-published literature
• Down- and upload of assignments (including information to tasks and grading)
E-Learning – Level 3: Distance Learning

E-learning tools used (additional to Lev.2):

• Animated gifs and films to advice students in the handling of software tools
• Surveys for evaluation of course acceptance
E-Learning – Level 4: Self Assessment Quizzes and Online-Tests

Options for the performance of tests, like

• Definition of a time limit or attempts allowed
• Possibility to shuffle the sequence of questions and answers
• Bundle of security options for providing the tests only to the examinees

Tests at IVFL were prepared using the following test possibilities:

• Single answer, multiple answer and true-false questions,
• Embedded answers,
• Matching,
• Numerical examples
SWOT – Strength („TOPS“)

- High flexibility in regard to workplace and to time for lecturers and students
- Students decide individually about the sequence and pacing of learning
- Easy access to learning materials for students
- Ideal communication platform between teacher(s) & student(s)
- Students appreciate testing their knowledge using self-assessment quizzes
- Self-assessment quizzes harmonize the degree of knowledge
- Online-examinations are time saving for teachers
- Software Moddle offers high stability and good performance (at BOKU)
**SWOT – Weaknesses („FLOPS“)**

- Preparation of e-learning courses is a time-consuming process
- Communication with students (discussion forums and chats are hardly accepted by the students)
- Lack of infrastructure in students’ home (hardware, internet access)
- Screen-handling is exhausting
- Students argue increased efforts for e-learning supported courses
SWOT – Opportunities （“TOPS ?”）

• E-learning tools make the learning process more interactive
• E-learning as a tool for the paradigm shift
  ▪ from teaching to learning (teacher-controlled learning, guided learning, self-controlled learning, cooperative learning),
  ▪ from conveying knowledge to sharing ideas,
  ▪ from delivering answers to facilitating problem-solving
• Preparation of e-learning elements is more creative than replication of teaching for several teaching units
• Merging of University Information Systems and e-learning systems
**SWOT – Threats („FLOPS ?“)**

- The use of „e-tools” cannot and does not replace excellent knowledge and good didactic skills of teachers
- E-learning cannot be seen as “time-saving” for teachers
- “Virtual University”
  - virtual classrooms,
  - virtual teachers,
  - virtual students,
  - virtual practicals, ….
- E-examinations: “Trust is good – control is better”
Conclusions

• Blended learning is the ideal teaching concept for the future, varying
  ▪ Learning concepts
  ▪ Duration of specific methods
  ▪ Didactic tools
  ▪ Number of students in teaching units (individual, student groups, plenum)

• Implementation of e-components does not save time

• E-learning demands a high degree of internet penetration within a country

• E-components enable new possibilities of knowledge transfer – also in terms of life long learning

• E-learning opens new potentials for interdisciplinary and inter-university cooperation on national and international level (Virtual Classroom)
What remains to be said . . .

. . . at BOKU in general and at IVFL in particular the first stage of implementation was due to infrastructural and software specific problems a

FLOP

BUT - the situation changed in a positive way and based on the experiences of the last six months: E-Learning in academic education is

TOP
THANK YOU
for Your Attention

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