

Use of E-Learning Tools in Context of Students' Labs

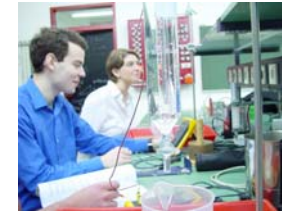
- Preparation, Blended Learning, Substitute

Heike Theyßen and Dieter Schumacher

Heinrich Heine

E-Learning – Students' Labs

- individuals or small learning groups
- a high level of **interaction**
- a mixture of different media



Contents

- projects
- target groups
- implementation scenarios
- e-learning elements
- implementation strategies
- quality management
- technical structure
- management tools
- lastingness

Heinrich Heine

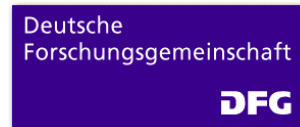
Projects

- FiPS
fipsgold.physik.uni-kl.de/
- Physik-Multimedial, pm²
www.physik-multimedial.de
- Physik 2000
www.physics2000.de/
- Virtuelle Fachhochschule
www.oncampus.de



Projects

- Physik für Mediziner
www.mm-projekt.uni-duesseldorf.de
- a cooperation project of the physics department and the university library granted by
- management and development: Heike Theyßen
theyssen@uni-bremen.de



Target Groups

- prospective students
- students of physics
- students of
 - mathematics, informatics
 - chemistry, biology, pharmacy
 - medicine



Students of Medicine

- previous experience
 - 70 % of all students attended their last physics lesson in 10th grade
 - the average student attended his last physics lesson about 4 years ago
- less interest in physics
- less experiences in mathematical descriptions

Implementation Scenarios

1. preparation of lab work, training



2. Combined learning

[Peter Debik](#)



[workshop physics](#)

Implementation Scenarios

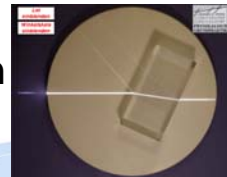
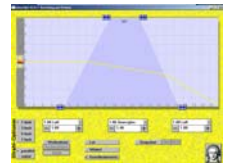
3. substitute for students lab

4. examinations



E-learning Elements

- text, pictures, graphs
- video clips
- animations
- simulations
- **Interactive Screen Experiments**,
(multidimensional representation
of real experiments)



E-learning Elements

- remote labs
(remote control of real experiments)
e.g. → <http://onlinelab.physik.uni-konstanz.de>



- audio channel
 - video clips and ISE with sound
 - speaking teacher

Implementation Strategies

- additional free offer
- alternative to a conventional course

Implementation Strategies

- alternative to a conventional course

University of Greifswald

- **obligatory** (1 part of 8)
- for 250 students per term

University of Aachen

- **obligatory** (1 part of 6)
- for 350 students per term



Implementation Strategies

- alternative to a conventional course

University of Düsseldorf

- **option** instead of conventional lab work
- 5 parts of 11
- for 400 students per term



Quality Management

- evaluation
e.g. acceptance, usage, problems
- gender aspects
<http://www.physik-multimedial.de/gender/gender.html>
- learning efficiency
<http://www.mm-projekt.uni-duesseldorf.de/Hypermedia.htm>



E-learning versus Students Lab

Studien zum Physiklernen
Vol. 41 Logos Verlag Berlin



<http://www.mm-projekt.uni-duesseldorf.de/Hypermedia.htm>

- Monika Hüther (PhD student)
University of Düsseldorf
- Heike Theyßen,
University of Bremen (present address)
- Elke Sumfleth,
University of Duisburg - Essen



Technical Structure

- server-based system
 - L I N U X
 - A pache Server
 - m ySQL data base
 - P H P coded pages



- learning environment
 - individual for the students
 - administrable for the teachers

Management tools

- authorization management
- content management

- monitoring
and / or
- steering
the student's way through
the e-learning unit

Lastingness

- service provided by the
 - department of physics
 - university library
 - computing -, multimedia -, e-learning centre
 - company Institute for Science Networking Oldenburg GmbH
an der Carl von Ossietzky Universität
- payment by
 - university
 - students

Summary

- certain projects
- peculiarities of the learning groups
- different implementation scenarios
- e-learning elements related to experiments
- successful implementation strategies
- importance of a quality management
- necessary management tools
- ways to secure lastingness

Acknowledgement

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co-workers

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Thank you for your attention!

Physics for Medical Students

**PHYSIK FÜR
MEDIZINER**

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Please take an account to test our e-learning units!

<http://www.mm-projekt.uni-duesseldorf.de>

<i>Accounts</i>	<i>PW</i>
➤ EPEC1	EPEC00
➤ EPEC2	EPEC00
➤ EPEC3	EPEC00