

# Mobile eLearning

Hauptseminar "E-Learning – Sommersemester 2008

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# Outline mLearning

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1.2. mLearning in General

1.3. Technical Restrictions and Usability

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1.6. Approaches or Learning (Problem-Based Learning, Explorative Learning, Situated Learning)

## 2. Applications

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2.4. Multimedia Applications

## 3. Conclusion

# Definition

- ≡ "Mobile Education - A Glance at The Future": mLearning is learning that can take place anytime, anywhere with the help of a mobile computer device (Dye et al, 2003).
- ≡ MLearning will feature new strategies, practices, tools, applications, and resources to realize the promise of ubiquitous, personal, and connected learning (Wagner, 2005).
- ≡ "M-learning: A new stage of e-learning": mLearning gives the ability to learn everywhere at every time without permanent physical connection to cable networks (Georgiev et al., 2004).
- ≡ All definitions base on the concept of learning with mobile devices anywhere at any time, while providing more mobility, being connected, facilitating exchanges and featuring new strategies and tools => independence

# mLearning in General

- ≡ Every social class - irrespective of the age - is penetrated with mobile devices
- ≡ Mobile eLearning (mLearning): eLearning with small, portable, and wireless computing and communication devices
- ≡ Devices must present adequate content and services for communication
- ≡ New Demands: Learners have to be disciplined and teacher may have problems to differ between working and leisure time
- ≡ Enables personalized learning detached from time, documents and locality with high connectivity

# Technical Restrictions / Usability

- ≡ Devices have to provide enough memory capacity
- ≡ Small display dimension and key size
- ≡ No much place for big and heavy accumulator batteries => lifetime of accumulators limited
- ≡ User guidance needed to be leaded through the system
- ≡ Considerations about increasing motivation and didactical requirements in traditional learning theories
- ≡ In new technologies requirements: additional technical and organizational claims

# Benefits and Drawbacks of mLearning

- ≡ If usability regarded: navigation through most systems very easy, similar and intuitive
- ≡ Adaptation to the user needs and higher level of personalization
- ≡ Learner can improve skills without disgracing himself
- ≡ May have beneficial effect on learners` confidence and willingness to learn
- ≡ High connectivity: user always linked to others => feedback

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- ≡ Lost-in-Hyperspace-phenomena: User can "get lost" in hyperspace
  - ≡ No big screens => pretty bad for long text (eyestrain very fast), and big images
  - ≡ Yet quick downloads possible, sometimes still high costs
  - ≡ Better with 4G: WiMAX promises to offer all types of services to affordable costs and facilitates "always-on"
  - ≡ No possibility to change the general learning attitude of a person

# Approaches of Learning

## ≡ Problem-Based Learning

- ≡ Complex and real problem in career terms posed
- ≡ Learning matters are compiled interdisciplinary problem- and praxis-orientated
- ≡ Includes estimation of a problem, target planning, generation of a problem area and the development and monitoring of cognitive structures
- ≡ Linked to other mobile or fixed devices => access to appropriate facts

## ≡ Explorative Learning

- ≡ From natural sciences (natural phenomena discovered by experiments) a pedagogical, didactical learning method
- ≡ Gives focus to students and ought to animate own-initial learning
- ≡ Not freehand browsing, but solving a given problem without any concrete progression or material
- ≡ Students sometimes explain learning contents better than educated teachers or experts

# Approaches of Learning

## ≡ Situated Learning

- ≡ Specific conditions central aspect of learning; which role plays human interaction
- ≡ Takes place in social contexts and focus on analyzing this very contexts
- ≡ Human learning always related to where and how it is learned
  - => Process of learning could not be analyzed separated from social, educational and physical context
- ≡ All learning more or less situated

# Applications for mLearning

- ≡ MLearning in areas, where contact between learner and teacher not that important then immediately correction
- ≡ In area of micro learning: in short learning-steps knowledge conveyed
- ≡ Examples: vocabulary, grammar and formula learning, abstract contents in general, technical knowledge and contents which need long continuous learning.
- ≡ Not sensible when special interaction or creativity is needed
- ≡ For example in cases with art contents, where pictures must be evaluated or artists' intention should be regarded and analyzed

# Multiple Choice Applications

- ≡ Answers very easy and quick to check => realization for mobile phones easy
- ≡ SMS Quiz builder: learner gets initial information (including short quiz and number where answer should be send to) via a poster, a projected screen. Afterwards receives one single reply containing results and follow up information
- ≡ Related to Problem-Based Learning
- ≡ Simplistic knowledge checking => no opportunity to convey or distribute entirely new knowledge, only possibility to check already acquired knowledge.
- ≡ However: deepening knowledge have a beneficial effect on standard of knowledge, if used in right contexts

# Location-Based Service

- Learning adapted to the current situation and context. Context-awareness supported by GPS (adaptation to location => higher locality)
- Niccimons "mobiDENK": mobile tourism information system with location-based multimedia-information about interesting objects. Visitor is located and orientates by a map with levels of detail
- Related to Situated and Explorative Learning



[http://medien.informatik.uni-oldenburg.de/pubs/boll\\_IMA2004\\_talk.pdf](http://medien.informatik.uni-oldenburg.de/pubs/boll_IMA2004_talk.pdf)

# Location-Based Service

- ≡ NOUS-Guide Application for iPhone 2.0 and iPod touch used in the Museum for Modern Art Beneficence Ludwig in Vienna and in the Messner Mountain Museum
- ≡ Institution completely autonomous and flexible in incorporating content into the system with NOUS Conductor (CMS)
- ≡ Content freely designed, modified and edited => full independence
- ≡ Related to Situated and Explorative Learning
- ≡ Agreement to be localized => maybe feeling of general observation and identification



<http://www.nousguide.com>

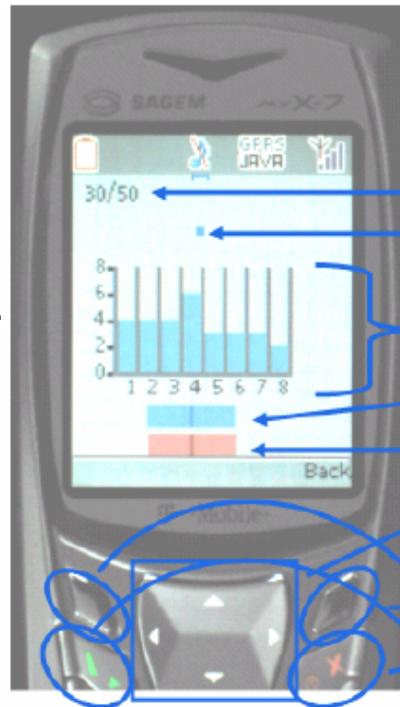
# Improvement Games

≡ HistoBrick: ubiquitous tool to deepen and examine knowledge about statistical distributions and their important characteristic numbers (measurement of time and spread of a data set: how crowded data is around measured location)

≡ May improve the learners' systematically thinking

≡ Idea: Falling down bricks, to be put into vertical boxes. With soft keys and joystick bricks can be positioned in the right boxes to reach a given distribution.

≡ Problem-Based Learning



**Game screen on Sagem MyX-7 phone (CLDC 1.0 / MIDP 2.0)**

**Number of current/all bricks**

**'Falling brick'**

**Boxes to move bricks into**

**Quartile plot of actual distribution**

**Target quartile plot**

**'Mini-joystick' to move the 'bricks'; 'up': 2sec pause for thought**

**Menu soft keys; right one for 'back' here**

**Selection soft keys**

[http://learning.ericsson.net/mlearning2/files/workpackage8/feu\\_evalhistobrick.pdf](http://learning.ericsson.net/mlearning2/files/workpackage8/feu_evalhistobrick.pdf)

# Multimedia-Learning Application

- ≡ Interactive learning which activates all senses is needed
- ≡ Mobile Learning Engine transfers the computer-aided and multimedia-based learning to mobile environments. Learner reads about metabolism of human being and views video about 3D presentation of human organs or is informed and questioned about human digestion.
- ≡ Using text-, image-, audio- and video-elements as well as interactive objects, knowledge can be improved
- ≡ Related to Problem-Based and Explorative Learning, while activating all senses



<http://drei.fh-joanneum.at/mle/start.php?sprache=en&id=1>

# Conclusion

- ≡ With mobile devices users will learn more often, but for shorter time periods
- ≡ Might cause pedagogic and academic advantages
  - => Studying claims compensation and may be highly demanding
- ≡ Not possible to guarantee better and more efficient memorization
- ≡ Questionable whether mLearning totally displaces traditional learning methods
  - Combination of classroom-learning, eLearning and new form of learning will offer best learning success
- ≡ Unsolved question concerning today's and future mobile and digital devices to consider in further studies: will users unlearn to communicate efficiently and to think critically by using these devices?

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