

Mobile eLearning

Hauptseminar "E-Learning – Sommersemester 2008

Anna Schwanengel
LFE Medieninformatik
13.05.2008

Outline mLearning

1. What is mLearning?

1.1. Definition

1.2. mLearning in General

1.3. Technical Restrictions and Usability

1.4. Benefits of mLearning

1.5. Drawbacks of mLearning

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

2. Applications

2.1. Multiple Choice Applications

2.2. Location-Based Services

2.3. Improvement Games

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

-
-
-
- ≡ 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

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>

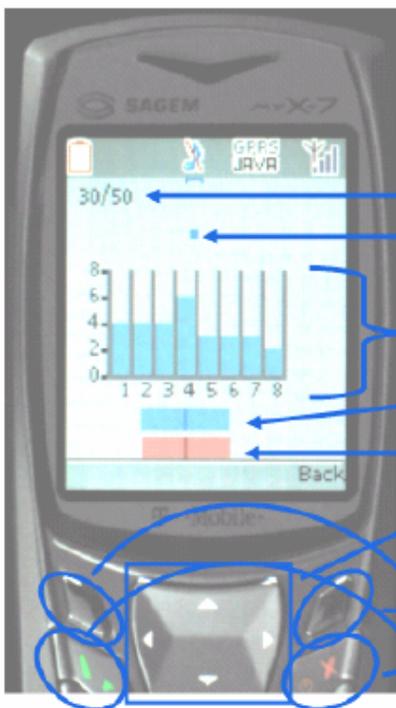
Improvement Games

≡ 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

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?

References

- ≡ Brown, J. S., Collins, A., Duguid, P., 1989. Situated cognition and the culture of learning. Educational Researcher, pp. 32-42.
- ≡ Cordova, D. I., Lepper, M. R., 1996. Intrinsic motivation and the process of learning : Beneficial effects of contextualization, personalization, and choice. In: Journal of educational psychology. American Psychological Association, pp. 715-730.
- ≡ Dye, A., Solstad, 2003. Mobile education - a glance at the future. http://nettskolen.nki.no/forskning/mobile_education.pdf, stand 06.2008.
- ≡ Georgiev, T., Georgieva, E., Smrikarov, A., 2004. M-learning: A new stage of elearning. In: CompSysTech '04: Proceedings of the 5th international conference on Computer systems and technologies.. ACM
- ≡ Holzinger, Nischelwitzer, A., Meisenberger, M., 2005. Mobile phones as a challenge for m-learninglearning: Examples for mobile interactive learning objects (milos). IEEE Computer Society, pp. 307-311.
- ≡ Kim, S., Kolko, B. E., Greer, T. H., 2002. Web-based problem solving learning: third-year medical students' participation in end-of-live care virtual clinic. In: Computers in Human Behavior. Vol. 18. Elsevier, pp. 761-772.
- ≡ Krüpper, 2008. Selbstorganisierende Netzwerke. <http://www.mobile.ifi.lmu.de/Vorlesungen/ss08/sene/unterlagen/Chapter2.pdf>, stand 06.2008.
- ≡ Kuszpa, 2005. Mobile learning - studieren mit dem Handy. In: Jahrbuch 2004 der Fernuniversität. pp. 59-71.
- ≡ Lave, J., Wenger, E., 1991. Situated learning: Legitimate peripheral participation. Cambridge University Press, New York.
- ≡ March, J. G., 1991. Exploration and exploitation in organizational learning. In: Organization Science. Institute for Operations Research and the Management Sciences, pp. 71-87.
- ≡ Nielsen, J., 1994. Heuristic evaluation. In: Usability inspection methods. John Wiley and Sons, pp. 25-62.
- ≡ Wagner, 2005. Enabling mobile learning. <http://connect.educause.edu/Library/EDUCAUSE+Review/EnablingMobileLearning/40549>, stand 06.2008.