M-Learning

Hauptseminar "E-Learning – Sommersemester 2008

Michael Kellerer

LFE Medieninformatik

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Agenda

Definitions

≡ E-Learning

  ≡ Tendency towards distant and individual learning

  ≡ Independent, self-motivated, goal-directed learning

 ≡ Technical support: bridging distances via computers, Internet
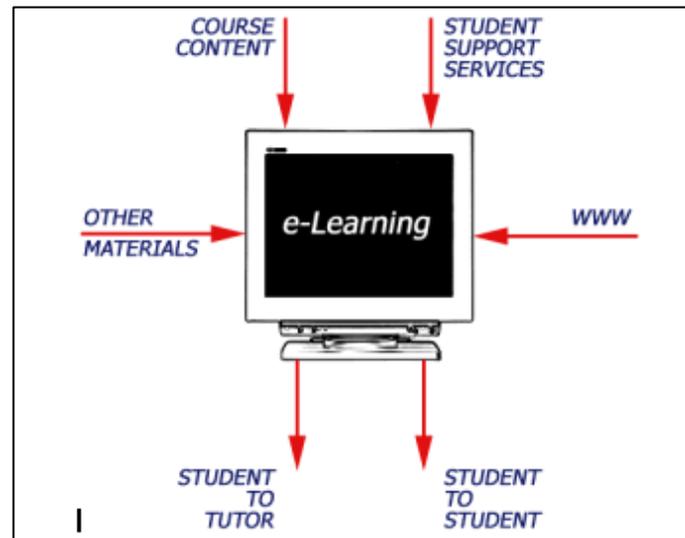
http://learning.ericsson.net/mlearning2/project_one/thebook/chapter1.html

Definitions

- ≡ M-Learning

  - ≡ Mobility: Independence of time and place

  - ≡ Increased activity instead of reactivity

  - ≡ Cooperation, personalization, contextual information

  - ≡ Computer is replaced by a mobile device, wireless connectivity
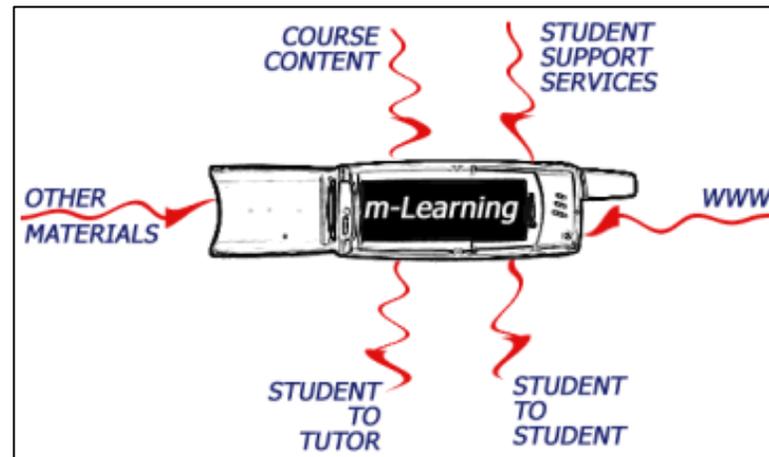
http://learning.ericsson.net/mlearning2/project_one/thebook/chapter1.html

Use of mobile devices

≡ Classification (Georgiev, 2004)

   ≡ Cell phone (widespread)

   ≡ Smart Phone (applications)

   ≡ PDA (processing power)

   ≡ Tablet PC (hand written input)

   ≡ Notebook (desktop PC and small size, wireless)

≡ Here: focus on cell phones, Smart Phones and PDAs

   ≡ Mobile, portable devices

   ≡ Focus on small applications and anytime use

http://theramblings.org/2008/05/26/
the-best-devotional-ever/

http://blog.i2fly.com/?p=88

http://www.navsolutions.de/offer.php

http://www.wiedervermarktung.de/
tablet_pc.html

http://www.wiedervermarktung.de/
notebooks.html

Use of mobile devices

≡ Advantages of mobile devices

  ≡ Mobility itself (independence, learning on the move)

  ≡ Modularity (interruptions, divide and aggregate content modules)

  ≡ Wireless connectivity

  ≡ Enrichment by technologies like GPS, WiFi

Use of mobile devices

- Technical restrictions and solutions

  - Small screen size and weak resolution

    - Possible solution: technical improvements and / or users grow accustomed

  - Insufficient input methods

    - Technical improvements, e.g. touch screens, voice input

  - Other drawbacks (Krämer, Ströhlein, 2006):

    - Low possibility of cooperation (→ increasing communication technologies)

    - Multimedia support, but audio output not always possible (→ headphones)

    - Lack of standards

Problem based learning

≡ Definition

    ≡ Clear target, goal-directed learning

    ≡ Collaborative execution

        ≡ metaphoric of classroom learning

        ≡ groups of students

    ≡ Single execution

        ≡ personal goal

   ≡ examples in health care

Problem based learning

≡ Sample applications: Classtalk (Roschelle, 2003)

   ≡ Process

      ≡ Typical classroom situation enriched by a mobile device

      ≡ Teacher asks specific question (multiple choice)

      ≡ Students answer anonymously by using a mobile device

      ≡ Answers are collected and visualized by graphics

      ≡ Teacher explains in detail and asks again, survey changes

   ≡ Advantages

      ≡ Easy and quick overview of knowledge and comprehension

      ≡ Anonymous answers decrease students' fear of failing

      ≡ High potential for many applications
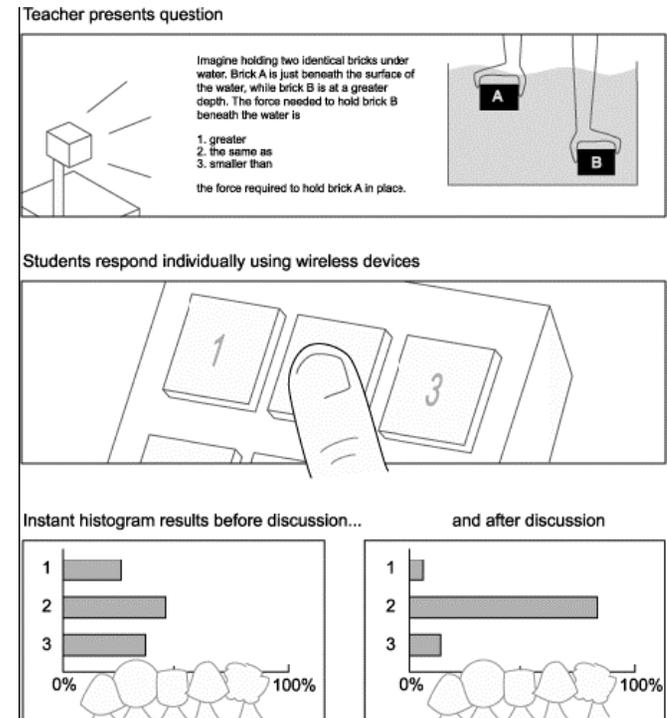
Roschelle, 2003

Problem based learning

≡ Sample applications: Language learning (Cooney and Keough, 2007)

    ≡ Process

        ≡ Independent way of learning a language

        ≡ Mobile phone, students listen to questions

        ≡ Answers through speech input

        ≡ Teachers receive solutions, feedback as pod casts

        ≡ Decision about level of comprehension

    ≡ Advantages

        ≡ Intuitive way of use

        ≡ Increasing motivation among students

        ≡ Easy survey for teachers

Explorative learning

≡ Definition

≡ Wider definition of goals

≡ Own exploration, research

≡ More freedom for the learner, less guidance

≡ Group learning

≡ Following the same imprecise research goal

≡ Explanations among each other

≡ Typical applications: museum, game-like appl.

Explorative learning

Sample applications: Museum visits (Bressler and Kahr-Hojland, 2007)

- SNSE project - Process
  - Targeting on teenagers, motivation for museum visits
  - Mobile phones used to interact with exhibits (SMS, MMS)
  - Audio output, graphics, text information
- Ego-Trap – Process
  - Fictional narrative taking place in a museum
  - Narration includes some exhibits
  - Ends up in a game-like application
- Advantages
  - Increasing interest on museum visits
  - Enrichment to „boring" museum tours

http://www.uni-muenster.de/journalisten/galerie/mammut.html

Explorative learning

≡ Sample applications: Game-like applications

  ≡ Histobrick (Krämer and Ströhlein, 2006) – Process

    ≡ Statistic evaluation built up by Tetris-like falling bricks

    ≡ Correctness controlled by targeted variables

    ≡ Offline and one-handed use

  ≡ MobileGame (Schwabe and Göth, 2005) – Process

    ≡ Orientation days at universities

    ≡ Getting to know places and people by solving tasks

    ≡ Teams of students hunting each other

    ≡ Maps of areas and buildings

  ≡ Advantages

    ≡ Different approaches: repetition / orientation

    ≡ (1) Easy use on the move, short modular game

    ≡ (2) Combination of spatial data and data exchange

Krämer & Ströhlein, 2006
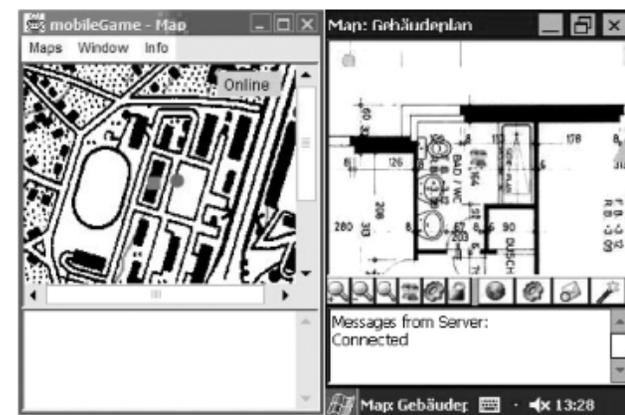
Schwabe & Göth, 2005

Situated learning

≡ Definition

  ≡ Contextual information about the user, environment, current situation

  ≡ Direct input through user's input or profile

  ≡ Wide area of contextual information

  ≡ Question of handling context

    ≡ Gathering information by sensors

    ≡ Time of delivering calculated information to the user

    ≡ Way of displaying information

Situated learning

≡ Sample applications: Framework for situated learning applications (Lonsdale, 2003)

  ≡ Process

    ≡ Context aware subsystem (CAS)

    ≡ General framework, complete architecture

    ≡ Generates search queries in background

    ≡ Selection, filter, deliverance of context

    ≡ Combination of sensors and direct input

    ≡ Hierarchical definition of context states and substates

  ≡ Advantages

    ≡ Calculation indirect, without users' actions

    ≡ Data security is needed

   ≡ General framework for many contextual applications
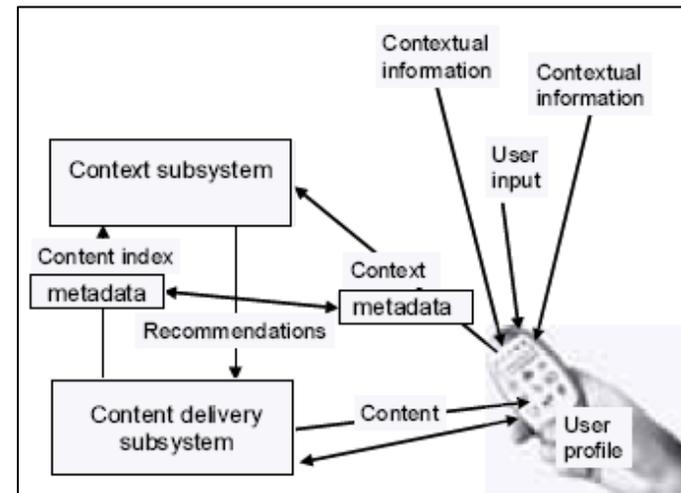
Lonsdale, 2003

Situated learning

≡ Sample applications: Game-like applications

  ≡ Geogames (Schlieder, 2006) – Process

    ≡ Framework, board games implemented in large areas

    ≡ Physical interaction instead of alternating moves

    ≡ Location-based implementation of Tic-Tac-Toe

  ≡ Savannah (Benford, 2005) – Process

    ≡ Role play for children, settled in African environment

    ≡ PDAs, WiFi and GPS for interaction and context

    ≡ Combination of hunting, survival and education

    ≡ Cooperation as prides of lions

  ≡ Advantages

    ≡ Location used to increase physical engagement

    ≡ Children are actively exploring and cooperating
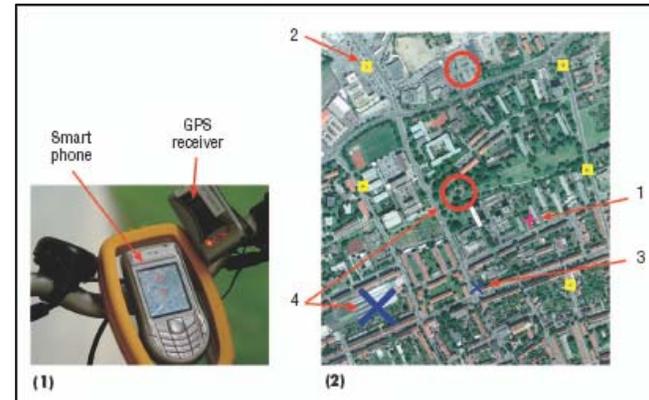
Schlieder, 2006

Benford, 2005

Conclusion

- Overview

 - Typical applications for mobile learning

    - Medical sector

    - Cultural education

    - Personal improvement (mental, physical)

  - New applications for e-learning approaches

- Suitability of mobile devices

  - Technical development

  - Specific, useful implementations

    - Short applications, quick repetitions, training

    - Enrichment of classroom education

    - Self-motivated and self-controlled (e.g. language learning)

  - Making use of contextual information

Questions

≡ Thank you for your interest.
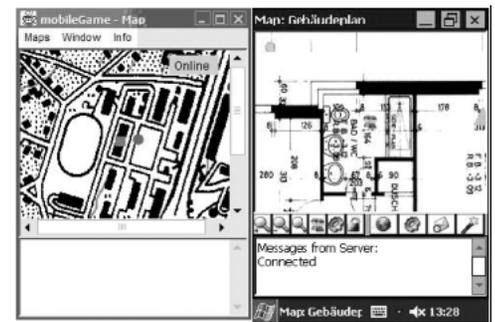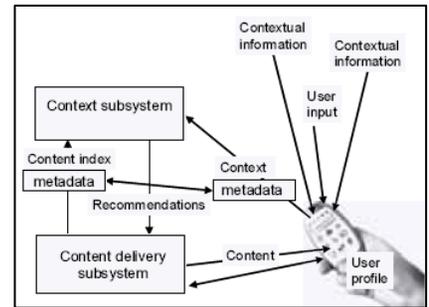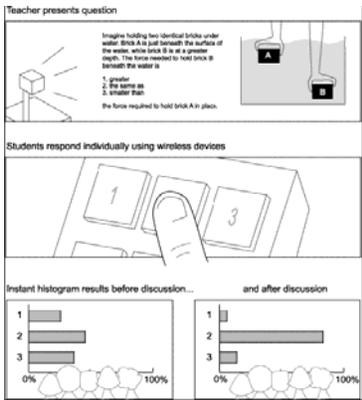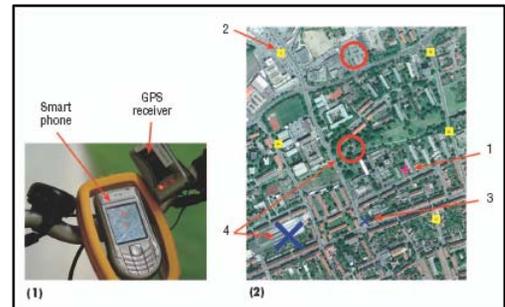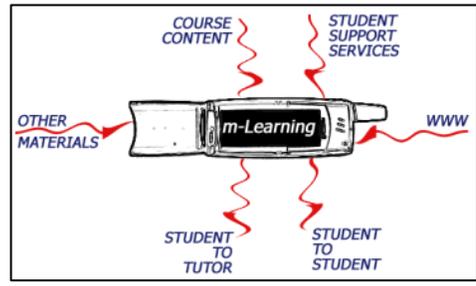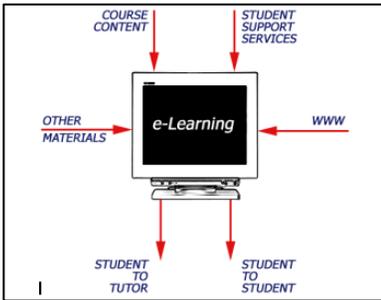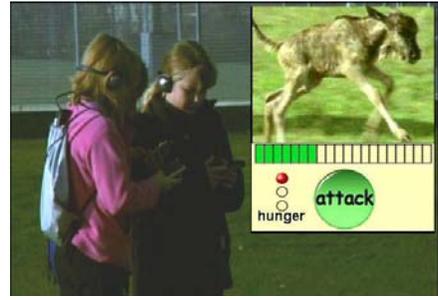
Bibliography

≡ Pictures

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