Contextualized Mobile Learning

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Marcel van der Klink on Workplace Learning

On the 19th of May dr. Marcel van der Klink of CELSTEC will give a presentation on 'The Boundaries of Workplace Learning'.

Publish date: 12 May 2009 (All day)

Edumedia presentation Peter Sloep on DSpace

The presentation that Peter Sloep gave on the Edumedia conference (4-5 May 2009, Salzburg) is available on DSpace.

Publish date: 11 May 2009 (All day)

CELESTE assists national Defence Training Institute to go on-line

CELESTE supports the national Defence Training Institute in the transition from on-campus contact learning to blended distance learning.
Open University of the Netherlands

- Public University
- Open Admission, Distance Education
- Degree programmes (Ba, MSc, Ph.D.)
  - Psychology
  - Law
  - Business Administration
  - Computer Science
  - Learning Sciences
  - Cultural Sciences
  - Environmental Sciences
- Innovation of Education and Training
- Mission is focussed on Lifelong Learning
Location
CELSTEC @ OUNL

The Centre of Excellence of the OUNL in the fields of:
• a. Learning Sciences
• b. Technology Enhanced Learning

The history of the institute goes back to the early 1980's.
Mission

• CELSTEC aims to research, develop and provide sustainable and evidence-based solutions for the advancement of learning at work, at school, at home and on the move.

• This is accomplished by combining state-of-the-art research in the learning sciences with the innovative powers of new media, mobile devices and the Internet.
Activities of CELSTEC

• Three programmes, each with three themes:
  – Learning and Cognition
  – Learning Networks for Professional Development
  – Learning Media

• Each programme integrates three activities:
  – Research Activities
  – Laboratory Activities for Open Innovations
  – Providing Solutions and Services to the market

• Institute for Education & Training
  – MSc Learning Sciences
  – Commercial Training (provided by the staff of 3 programmes)

• Temporary Strategic Programmes
  – Lifelong Learning Services
  – OUNL related programmes (e.g. IPO)
  – Open Educational Resources
The Learning & Cognition Programme

• **Objective:**
  Improve education & training at schools and in-company by providing efficient arrangements

• **Target Users of the results:**
  Teachers, trainers, managers in schools, universities, training companies

• **Three themes:**
  – learning tasks
  – learning environments
  – learning assessments
The Learning Networks Programme

- **Objective:**
  Improve professional development by providing efficient network-oriented methods and technologies

- **Target Users of the results:**
  Professionals, Human Resource Managers, Managers of SME's & employment agencies, regions, cities, unions, sector organisations

- **Three themes:**
  - professional development
  - learning network services
  - professional communities
The Learning Media Programme

- **Objective:**
  Improve the learning experience by utilizing the innovative power of new media, mobile devices and the Internet

- **Target Users of the results:**
  Innovators in Education, Training and Human Resource Management

- **Three themes:**
  - immersive media
  - mobile media
  - social media
Staff

- CELSTEC employes over a **110 FTE professionals from over 18 different countries**:  
  - Full, Associate & Assistent Professors  
  - Post Docs  
  - Ph.D. Students (90% of them are employed)  
  - Media Specialists  
  - Administrative and Support Staff

- 53% of the staff is payed from primary funding, 47% is employed on secondary (national science foundation, EU research) and tertiary (industry contracts) budgets

- The institute has the collaborate with national and international partners where possible (co-development, co-research, etc.)
Directed by Celstec

Directed by partners

Laboratory

R&D ➔ Experiments ➔ Implementation ➔ Appliance

Celstec staff

Partner staff
CELSTEC Laboratory

- Open Innovation Policy
- Experimentation stage of CELSTEC’s innovation model;
- Supports knowledge creation, knowledge emergence and knowledge dissemination
- Develops and offers innovation services on behalf of third parties;
Work - Innovation - Place

• atmosphere that is essentially different from regular office ambiance;

• will serve as a test plot for hot desking (‘flexplekken’).
Structure, Facilities, and current Educational Scenarios
Basic idea: user contexts

• @home
• @work
• @school

• What does this mean for the @education provider?

http://flickr.com/photos/kjarrett/1195498600/sizes/l/#cc_license
Innovation Scenarios

@home
- Educational Games
- User Generated Content
- Mobile and Personal LLL
- Personal Learning Environments

@school
- Teacher Education with Open Content
- Building Learning Networks
- Personal Learning Environments

@work
- Content Engineering in OER
- Incentive Systems in Social Software
- Personal Learning Environments

@education Service Provider
- New business models
- Crossplatform Content Delivery
CELSTEC Laboratory floor plan

1.26 Media Lounge
1.28 Hot Desking Room
1.29 Hot desking Room
1.30 Admin Room
1.31 Lecture Room
1.40 Server Room
1.39 Hot Desking Room
1.38 Hot Desking Room
1.36/37 Educator Studio
1.35 Usability Room
1.34 Observation Room
1.32/33 Team Room

Legend:
- Group work
- Hot desking
- Measurement
- Lab management
Open Scenarios and Facilities

CELSTEC Lab Facilities

The CELSTEC lab offers four main facilities to support different learning scenarios. The four facilities are structured around main places where learning takes place today: School, Home, Work, and the support given by education providers. The scenarios for each room are described on the pages below. These scenarios are implemented in demonstrations in the lab and you can visit the lab and experience a number of demonstrations which are concrete toolings and instantiations of room scenarios.

Main room facilities are:

- **Educator Studio**: This room represents the back-end services that are of relevance for creators and providers of distance learning in new media scenarios. It highlights the conditions, tools, and methods for realizing mediated learning arrangements by teachers, course developers, and tutors.

- **Lecture Room**: This room represents a traditional classroom setting at different universities and enterprises with today’s media. The room can host up to 27 participants and supports individual work, group work, and lectures. When needed, the furniture can be re-arranged in a flexible way to facilitate individuals and small groups.

- **Media Lounge**: The Media Lounge represents the learner’s home context. It anticipates the future living room as a creative environment for combined lecture, entertainment, and non-formal learning.

- **Team Room**: This room represents the professional context of knowledge workers. On the one hand it offers an effective meeting room with extensive support of productivity tools and collaboration media.
Currently Implemented Scenarios

- #ES1 Content Engineering for Education in OER
- #ES2 Multi User Gaming and Simulations
- #LR1 Rapid Content Production in Classroom Situations
- #LR2 Remote Teaching and Peer Group Learning
- #ML1- Free Educational Games and Infotainment
- #ML2- Second Life
- #ML3 - Content Production with Social Media Tools
- #TR1 Innovation in the Workplace, Brainstorming
- #TR2 Idea Collection and Structuring
Pedagogical Perspectives on Mobile Learning
Why Mobile Social Software for Learning?

• Knowledge acquisition in a cultural context and the integration in a community of practice (Wenger & Lave, 1991)

• Learning is always situated within its application and the community of practice (Mandl, Gruber, & Renkl, 1995)

• Reflection in action and reflection about action (D. A. Schön, 1983; D.A. Schön, 1987)
A Reference Model of Mobile Social Software (DeJong, Specht & Koper, 2007)

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<td>Relations context</td>
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Example: Shared Documents with Notification
Content …

- Content, describes applications based on the artefacts exchanged and shared by users.
Different forms of Content

• The MOBILearn project combined multimedia content creation, content delivery and stores context metadata about that content.

• KLIV project (Eva Brandt & Hillgren, 2003) delivered video content to PDAs used by nurses.

• xTask adds the collaborative editing of content and instant messaging for discussing the content.

• Environmental Detectives (Klopfer, Squire, & Jenkins, 2002) is an example that along with content creation stores location metadata.

- RAFT project, which demonstrated effects on classroom engagement and participation with the integration of authentic learning materials from remote field trips (Bergin et al., 2007)
Context ...

- Context, describes applications based on the context parameters taken into account for learning support.
Context taken into Account

- Individuality Context, includes information about objects and users in the real world as also information about groups and the attributes or properties the members have in common.

- Time Context, basically this dimension ranges from simple points in time to ranges, intervals and a complete history of entities.

- Locations Context, are divided into quantitative and qualitative location models, which allow to work with absolute and relative positions.

- Activity Context, reflects the entities goals, tasks, and actions.

- Relations Context, captures the relation an entity has establish to other entities, and describes social, functional,
Purpose ...

- Purpose, describes applications according to the goals and methods of the system for enabling learning.
• Social Software in General: Identity management, information sharing, relationship management (Richter & Koch, 2007)
• Sharing Content and Knowledge: iLogbook (Bull et al., 2004)
• Facilitate discussion and brainstorming: Mobile notes
• Mobile recommender systems like MovieLens Unplugged
• Location awareness, group awareness, NearMe
• HANDLer project offers conversation between mobile learners to support knowledge (Sharples, Corlett, & Westmancott, 2002)
Information Flow

– Information Flow, classifies applications according to the number of entities in the systems information flow.
Context Blogging

Diagram:
- User2
- User1
- Physical object
- Context tag
  - 1. Personal information history
  - 2. Object identification
  - 3. Contextualized personal history
- Blog entry
- Blog category tag
- Blog
Pedagogical Models

– Pedagogical paradigms and instructional models
# Perspectives: Mobile Technologies for Learning

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<tr>
<th>Theme</th>
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<th>Activities</th>
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<td>Skinner, Pavlov</td>
<td>• drill and feedback</td>
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<td></td>
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<td>• classroom response systems</td>
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<td>Constructivist learning</td>
<td>Piaget, Bruner, Papert</td>
<td>• participatory simulations</td>
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<td>Situated learning</td>
<td>Lave, Brown</td>
<td>• problem and case-based learning</td>
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<td></td>
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<td>• context awareness</td>
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<td>Collaborative learning</td>
<td>Vygotsky</td>
<td>• mobile computer-supported collaborative learning</td>
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<td>(MCSCL)</td>
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<td>Informal and lifelong learning</td>
<td>Eraut</td>
<td>• supporting intentional and accidental learning</td>
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<td></td>
<td></td>
<td>episodes</td>
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<tr>
<td>Learning and teaching support</td>
<td>n/a</td>
<td>• personal organisation</td>
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<td></td>
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<td>• support for administrative duties (e.g. attendance)</td>
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Table 1: An activity-based categorisation of mobile technologies and learning
Behaviourist Learning - Content in Context

- Classroom Applications
  - Formative Assessment
  - Peer Feedback
  - Anonymous Feedback
  - Group Awareness

- Stimulus
  - Present Stimulus
    - Contextualize Stimulus
      - Aggregate Responses
      - Collect Responses

- Response

- Contextualized Content Presentation
  - Programmed Instruction
  - Contextualized Learning Activities
  - Field Trips, City Rallies
Mobile Situated Learning

Authentic Learning Environment

- Authentic Domain Activities
- Field Trips
- Context Metadata
- Context
- Reflection in and about Action
- Community of Practice
- Mobile Blogging

Learning Activity
Examples

• Behaviourist approaches on learning are the foundation of most notifications systems (SMSCoach). Moreover, the more standard form of notification systems want the user to react on or learn about some peer activity being performed.

• Constructivist approaches like MediaBoard (Colley & Stead, 2004) create a mobile accessible working space aimed at fostering interaction in a community of practice. Annotation tools like Mobile Notes, used in brainstorming sessions are also often designed from a constructivist point of view.

• An example of situated learning support is the RAFT project that aims “to provide a cooperative learning environment spanning field trip and the classroom”.

• Informal and lifelong learning approaches are also encountered in some systems. QueryLens is one example of such a system, in which an interest community develops around real world content as music.
Results of Analysis

• provide more integrated systems with a range of functionality
• better and wider use of metadata
• more advanced and wider use of notification techniques
• the use of more context information that location and identity alone and use of techniques to derive more complex context information
• more attention to systems aiming at informal and lifelong learning.
Once Again the Overview

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Standards

- Interaction Modelling, UML
- Learning Process Modelling (EML, IMS-LD)
- Semantic Web Approaches, RDF, POIXML
- Sensor Protocols and Modelling, Location
eduroam or local wireless mmlab-device
c315t

#mlss09
twitter, flickr, tweme, ...
mlss09.twitterwallr.com

drop.io/medialab_mlss09

mobilelearningspringschool.wetpaint.com

Mobile Language Learning Demo

Android ScanaTag/Wikitude Demo

Awareness System

PodCast Producer
Thank You.

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