Mobile Social Software for Learning

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- Started in 1984; national institute;
- Two missions:
  1. provide open distance education
     7 faculties, 24000 students
     24 study centres in Netherlands and Belgium
     Develop education in multidisciplinary teams
     Deliver education through a variety of technologies (print, cd-rom, telephone, internet, face to face contact sessions, practical rooms, etc.)
- 2. innovate education
- The Educational Technology Expertise Centre (OTEC) of the Open University of the Netherlands carries out R&D into Learning Technologies.
- The current technology development programme is investigating Self-Organized Learning Networks. (Ca. 80 Staff)
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)
### Dimensions of Analysis

**Table 1 A reference model for mobile social software**

<table>
<thead>
<tr>
<th>Content</th>
<th>Context</th>
<th>Information flow</th>
<th>Purpose</th>
<th>Pedagogical model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annotations Documents Messages Notifications</td>
<td>Individuality Context Time Context Locations Context Environment or Activity Context Relations context</td>
<td>One-to-one One-to-many Many-to-one Many-to-many</td>
<td>sharing content and knowledge facilitate discussion and brainstorming social awareness guide communication engagement and immersion</td>
<td>behaviourist cognitive constructivist social constructivist</td>
</tr>
</tbody>
</table>
Fallbeispiel: Shared Documents with Notification
Content, describes applications based on the artefacts exchanged and shared by users.
Different forms of Content

- The MOBI-Learn 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, 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, and compositional relationships.
Purpose ...

Purpose, describes applications according to the goals and methods of the system for enabling learning.
Purpose

- 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 system's information flow.
Context Blogging

- user2
- user1
- context tag
  - blog entry
  - blog category tag
- physical object
  - 2. object identification
  - 1. personal information history
  - 3. contextualized personal history
  - 4. object class information
  - 5. object perspective
Pedagogical Models

Pedagogical paradigms and instructional models
Perspectives: Mobile Technologies for Learning (Nesta Futurelab 2004)

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

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

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

- Stimulus
- Response

- Contextualized Content Presentation
- Programmed Instruction
- Contextualized Learning Activities
- Field Trips, City Rallys
Mobile Situated Learning
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 a 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.
An Reference Architecture for Contextualized Media
Standards im Referenzmodell

- Interaction Modelling, UML

- Learning Process Modelling (EML, IMS-LD)

- Semantic Web Approaches, RDF, POIXML

- Sensor Protocols and Modelling, Location Tracking Standards and Protocols
Summary

- Reference Model for Mobile Social Software for Learning
  - Content, Context, Purpose, Information Flow, Pedagogical Paradigm

- Reference Architecture for Contextualized Media
  - Sensor Layer, Semantic Layer, Control (Process) Layer, Actuator Layer

- Standards relevant for the Architecture Parts
Thank You.

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