Usability of a Runtime Environment ... in Mixed Mode Higher Education

Michael Klebl
IMS Learning Design (some of Level A) in Mixed Mode Higher Education

Overview

- Background, Intentions and Scope
- A Prototypical Runtime Environment
  - Extending Moodle (in short …)
  - Usability Evaluation (in short …)
  - Viable Concepts for the GUI
- Outcomes
  - Classification of Learning Objects
  - IMS Learning Design in Touch with Reality
  - Complementary Activities in Classroom Situations
Background, Intentions and Scope

Research Project at the Catholic University Eichstaett–Ingolstadt

- Conceptual Examination
  - based on specific German approaches towards teaching and learning

- Empirical Review
  - several university courses provided a use case
  - limited resources
Background, Intentions and Scope

Questions Covered by the Empirical Review

- Can IMS Learning Design be used to support mixed mode learning scenarios?

- How do users interact with a learning environment for IMS Learning Design in terms of usability?
Background, Intentions and Scope

... not within the scope

- no intention to fully implement IMS–LD at university
- no intention to prove advantages and disadvantages of one or another pedagogical approach
- no authoring features for IMS–LD implemented
- only subset of IMS–LD Level A implemented

- pragmatic approach: *Get things running in real life, and talk to users.*
A Prototypical Runtime Environment 'lab005'

... Extending Moodle

- IMS–LD as 'course format'

<table>
<thead>
<tr>
<th>User Management and Authentication</th>
<th>Course Structure</th>
<th>Learning Objects and Services</th>
<th>Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\auth, \login, \user)</td>
<td>(\course) IMS Learning Design as extension</td>
<td>(\mod)</td>
<td></td>
</tr>
</tbody>
</table>

Presentation Level (\theme)
lab005 as extension

| Access to File System (\file.php, \files) | Access to Database (\lib\adodb) |
A Prototypical Runtime Environment 'lab005'

Usability Evaluation

- Formative Evaluation ... 4 Versions
- User Centred
  - Quantitative ... regarding ISO 9241-10
  - Qualitative ... Heuristic Criteria (Molich/Nielsen)

- Major improvement from 2\textsuperscript{nd} to 3\textsuperscript{rd} version
  - Viable Concepts
A Prototypical Runtime Environment 'lab005'

Viable Concepts

- Taxonomy and Sequencing in the Activity Tree
  - Course = Several Units-of-Learning
  - Chapter = Unit-of-Learning with Phases ('Acts') and Activities
  - Cue-Card = Activities

- Cue-Cards for Activities
  - back and forth

- List of Elements in the Learning Environment
  - no Environment Tree
Berechnung von Papiergewichten (IMS-LD Muster)

Aufgabenstellung zur Beispiel-Broschüre

Die Broschüre, die Sie als Beispiel erhalten haben, ist im Format Umschlag 32 Seiten. Für die Umschlagseiten wurde dasselbe Papier verwendet. Dieses Papier hat die Grammatur von 120 g/qm.

Wie viel Gramm wiegt ein Prospekt?
Outcomes

Classification of Learning Objects

- Classification of Elements in the Learning Environment
  - suggested by IMS-LD

- Representation in GUI?
  - no concern for learner
  - given through activity description
Outcomes

IMS Learning Design in Touch with Reality

- Mixed mode learning scenarios
  - imply real life situations
  - direct communication
  - use of physical objects

- effect of disorientation
  - from GUI to real life
  - between internal versus linked resources

- Attribute: availability-type
  _ included
  _ real
  _ linked
Outcomes

Complementary Activities in Classroom Situations

- Mixed mode learning scenarios
  - learning activities and supporting activities take place in close relationship

- Complementary Activities
  - not move-by-move
    (rather in online learning ...)

- Notion of Complementary Activities
  - Element activity-situation
Outlook

Further Issues of Research

- Learning Design Patterns
  - 'Methods' of Teaching and Learning
  - De–Contextualization + Re–Contualization

- Internationalisation / Lokalisation
  Learning Design Patterns
  - e.g. Corporate Learning Worldwide
  - Cultural Grounding of Teaching and Learning
Thank You!

Questions …
… Details, Ideas, Discussion …