Learning Design
Past, present and future:
Questions & Challenges

Colin Tattersall
The Open University of the Netherlands
Overview

• A little history
• Where we are today
• Looking to the future
Overview

• A little history
• Where we are today
• Looking to the future
Open University NL

- First student in September 1984
- Government-funded institute for **distance learning at university level**.
- Goal: to make higher education accessible to anyone with the necessary aptitudes and interests, regardless of formal qualifications.
  - to create a cost-effective form of higher education,
  - to encourage innovation in Dutch higher education, in terms of both curriculum and teaching methods,
  - to reduce the teacher shortage in Dutch primary and secondary schools, and
  - to be a recognized player in distance and e-learning training programmes and consultancy.
### OUNL: some facts & figures

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
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<tbody>
<tr>
<td>staff members</td>
<td>791</td>
</tr>
<tr>
<td>active students</td>
<td>21,004</td>
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<tr>
<td>student profile</td>
<td>49% female - 51% male</td>
</tr>
<tr>
<td></td>
<td>age 18-26: 10% - age 26-35: 36% - age 36-45: 33% - above 45: 21%</td>
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<td></td>
<td>44% has a paid job of 35 to 40 hours per week</td>
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<td>study centres</td>
<td>12 study centres in the Netherlands</td>
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<td>6 study centres in Belgium</td>
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<td>electronic learning environment</td>
<td>20,539 students and alumni make use of Studienet (98%)</td>
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<td>bachelor programmes</td>
<td>6</td>
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<tr>
<td>master programmes</td>
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<tr>
<td>academic courses</td>
<td>416</td>
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<td>course enrolments</td>
<td>52,961</td>
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<td>course certificates in 2003</td>
<td>26,611</td>
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</table>
Three key historical points

• Early use of e-learning
  – web sites supporting courses, email, forums
  – Heterogeneous e-learning systems landscape
• Interest in educational theories
  – Competence based learning, problem based learning
• Funded task of innovating in education
Rationale

• More to e-learning than what you can do with a Virtual Learning Environment (VLE)
• More to e-learning than learning objects
• Educational theories can help e-learning
  – Eg Social Constructivism
• Need to avoid additional burden on teachers and staff
• Need to support cooperation between institutions on developing courses
Analysis of learning situations

• Large variety of learning activities
• Large variety of learning environments (generic, task specific)
• Sometimes individual, sometimes group interactions
• In most situations some kind of support (teachers, tools)
• Sometimes self-directed, sometimes teacher directed
• When appropriate, using computers and other new technologies
The Quest

• Can we describe these learning events in a generic way?
• Can we make a generic description of all
  – the learning & support activities,
  – including the environment in which they take place?
• => search for a notation of the teaching-learning process in a Unit of Learning (e.g. a course, workshop, event, ...)

TEN Competence
Building The European Network for Lifelong Competence Development
What would the quest lead to?

- **Basis for the next generation of e-learning systems**: increasing the ‘richness’ of different learning activities

- Should bring **new** more effective, efficient & attractive **learning models** (active learning, problem based, ...)

- **Integrate** the large number of isolated existing standards (LOM, CP, QTI, RCD, LIP, ..) to create executable and interoperable units of learning ('courses')

- Support automation of the **workflow** in the teaching/learning process to decrease workload (especially of teachers)

- Every other advantage that a **standard notation** brings: reflection, communication, sharing, reuse, research, similarity studies, evaluation, etc.

*TEN Competence*

Building The European Network for Lifelong Competence Development
1998 - 2003
OpenUniversiteitNederland

EML 2000
Educational Modelling Language
XML Notation for Units of Learning

<unit-of-learning>
  </objectives>
  </roles>
  </activities>
  </environments>
  </method>
<unit-of-learning/>

Edubox
EML Runtime Environment
version 1, 2, 3
EML
Educational Modelling Language

2000

IMS
(CEN/ISSS)

2003

IMS LD
Information Model
Best Practice Guide
Binding

Assessments, interactions, content, …
OK, you said you wanted a notation
We have a notation

• And it’s at the heart of an open technical specification
• But doesn’t tell us
  – how to record/create the notation
  – how to adapt/edit the notation
  – how to aggregate several notations
  – how to use the notation
• More work needed
Beyond the notation

• Significant attention up to now given to the notation
  – Needed to help community understand the nature of the spec.
  – Needed to get some basic infrastructure in place
• Now need to build on these first steps …
Road Map for Learning Design

• Specification (febr. 2003)
• Awareness raising (febr. 2004)
• First generation tools (febr. 2005)
• Demonstrators & usability improvement of tools, application profiles and conformance testing (during 2005)
• Development of community of users (2005/2006)
• Pilots, experiments, production use (2006/2007)
Overview

- A little history
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Publications

- 'Learning Design' book from Springer
- Special Issue Journal of Interactive Media in Education on Learning Design (Dec. 2005)
- Special Issue IEEE Educational Technology & Society, Jan. 2006 on Learning Design
- Lots of journal and conference articles
Explanations

– Preprints of articles & presentations at dspace.ou.nl

– Community facilities on moodle.learningnetworks.org
## Examples

<table>
<thead>
<tr>
<th>Date of Issue</th>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>Feb-2005</td>
<td>Become a writer</td>
<td>Grives, Helen</td>
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<td>Feb-2005</td>
<td>Brainstorming lost in the Moon</td>
<td>Hernández-Leo, Davinia</td>
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<td>May-2005</td>
<td>Caminatas</td>
<td>Burgos, Dario</td>
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<td>27-May-2005</td>
<td>Caminatas I</td>
<td>Burgos, Dario</td>
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<td>2004</td>
<td>Candidas, the great unknown (I)</td>
<td>Burgos, Dario</td>
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<td>2005</td>
<td>Candidas, The Great Unknown (II)</td>
<td>Burgos, Dario</td>
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<td>Feb-2005</td>
<td>Endolab</td>
<td>Langewis, Eily</td>
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<td>21-Jun-2005</td>
<td>Free style assessment</td>
<td>Burgos, Dario</td>
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<td>2004</td>
<td>From Lesson Plan to LD (Level A)</td>
<td>Koper, Rob</td>
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<td>2004</td>
<td>From Lesson Plan to LD (Level B)</td>
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<td>21-Jun-2005</td>
<td>Geo-Quiz 1</td>
<td>Burgos, Dario</td>
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<td>21-Jun-2005</td>
<td>Geo-Quiz 2</td>
<td>Burgos, Dario; Tattersall, Colin</td>
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<td>6-Jul-2005</td>
<td>Geo-Quiz 3</td>
<td>Burgos, Dario</td>
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<td>2004</td>
<td>Hello World</td>
<td>Tattersall, Colin</td>
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<td>16-Feb-2005</td>
<td>IMS Learning Design Level 0</td>
<td>Burgos, Dario; Berbegal, Nidia</td>
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<td>2005</td>
<td>IMS Learning Design Level 0 (HTML)</td>
<td>Burgos, Dario; Berbegal, Nidia</td>
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<td>21-Jun-2005</td>
<td>Introduction to Level C</td>
<td>Burgos, Dario; Vogten, Hubert; Koper, Rob</td>
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<td>2004</td>
<td>Learning Activities With Conditions</td>
<td>O’Neill, Owen</td>
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<td>21-Jun-2005</td>
<td>Learning to listen to Jazz</td>
<td>Tattersall, Colin; Burgos, Daniel</td>
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<td>2005</td>
<td>Programmed Instruction</td>
<td>Tattersall, Colin; O’Neill, Owen</td>
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<td>5-Jan-2006</td>
<td>Programmed Instruction with QTI</td>
<td>Tattersall, Colin; O’Neill, Owen; Martens, Harrie; Vogten, Hubert</td>
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</tbody>
</table>

Via moodle.learningnetworks.org
And dspace.learningnetworks.org
Various projects

• EU
  – **TENCompetence** (2005-2009)
  – ProLearn (2003-2007)
  – Cooper (2005-2007)
  – plus others

• JISC (UK)
  – Sled, Slide (2)
  – DLD
Worldwide interest

- Spain, UK, Netherlands, Germany, Canada, Australia, …
- France!
IMS LD support in VLEs

• Ongoing R&D:
  – Moodle
  – dotLRN
  – ATutor
LD-aware tooling

- Reload editor
- CopperCore engine
- Players
  - Basic player (included with CopperCore)
  - Reload player
  - Sled player
- Basis for an integrated infrastructure ....
Question 1
What is a frikandel?
- A type of vegan sushi
- A popular Dutch snack made from meat
- Toxic waste

Yes, that is correct.
Some experience

• Used with students/staff
  – Liverpool Hope University
  – University of Lausanne

• “Seems promising but it’s a hell of a job”
Overview

• A little history
• Where we are today
• Looking to the future
Where would we like to be?

• I would like to be helped in orchestrating high-quality e-learning arrangements
  – ‘I’ could be a teacher/tutor, Human resources manager, enthusiast, hobbyist, …
  – Want to be helped to knit together appropriate/proven combinations of services, content, group work, …. for my situation
  – Want to press a button and have it be delivered …
Challenges …

• It’s too hard to make UoLs with the current tools
  – We have editors for the notation; need design environments
  – (Visual) design languages/environments needed
  – Metaphors, critiquing systems, wizards, templates, drawing on pedagogical theories and e-learning practices
  – Different languages/design environments for different situations/user groups?
  – (Model-driven approach needed?)
Challenges …

• We can’t yet plug and play new runtime services
  – SCORM service, games, Google Earth, …
  – Easing this will also require more work on the previous challenge
• Have to be able to design for integration
  – Model-driven approach?
Challenges …

• Lack of a library of complete, well-founded, field tested, cool examples
• Specific questions on the notation
  – Grouping in IMS LD
• Need to complete the toolset
  – General infrastructure needed (eg ePortfolio service, user/group service, …)
  – Specific LD Tools, eg to support runtime adaptation
Challenges …

• Misconceptions on the nature of the spec/tooling
  – IMS LD doesn’t compare very well with Virtual Learning Environment X
    – Like comparing HTML to Internet Explorer
  – System X is better for teachers because you can create courses in an easy way; to use IMS LD you have to deal with a lot of technical issues
    – We don’t want teachers to know they are using IMS LD
  – Teachers don’t need a design; they want to be able to be creative, modify on-the-fly
    – Clarify who wants to do what and whether an e-learning spec will help
Three-pronged approach

• Continue research
• Continue engineering
• Continue dissemination
Areas to conduct work (1)

• Authoring environments & other tools for Learning Design
  – Learning Design Patterns (pedagogical ‘components’)
  – Graphical notation of learning designs

• Model-driven e-learning
  – Generating IMS LD as executable representation

• Learning Design and new forms of assessment
  – Formative assessment
  – Describing eAssessment processes
    • Peer assessment
    • 360-degrees feedback
Areas to conduct work (2)

- Runtime & design time adaptations
  - Tools to modify an executing UoL
  - Mining runtime data
  - Comparing what worked & what didn’t
  - Pattern recognition

- Runtime Collaborative Services integration
  - An (model-driven?) approach to integration of new services – wiki, blog, …

- Learning Design and the Personal Learning Environment (PLE)
  - Sharing undesigned paths described using IMS LD
  - Pattern recognition
Cooperation

- Publications
  - Books, articles
- Seminars/workshops
- Partnering
  - TenCompetence Associate Partners
- New projects
  - French national projects?
  - Bi-lateral possibilities?
  - European?
Many thanks!

• And good luck this evening:

  France vs. Switzerland (18:00)