Representing adaptive eLearning strategies in IMS Learning Design

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Rationale

• Exploiting research in adaptive hypermedia in LD-based pedagogical models
• Supporting exchange of approaches to adaptation
• Making comparison or results easier
Four main approaches to adaptive learning

– *macro-adaptive*, selecting a few components that define the general guidelines for the eLearning process

– *aptitude-treatment interaction*, proposing different types of instructions and/or different types of media for different students

– *micro-adaptive*, monitoring the learning behavior of the student while running specific tasks and adapting the instructional design afterwards

– *constructivist-collaborative*, focused on how the student actually learns while sharing knowledge and activities with others
Some types of adaptation seen in the literature

1. Learning flow-based
2. Content-based
3. Interactive problem solving support
4. Adaptive information filtering
5. Adaptive grouping
6. Adaptive evaluation
7. Changes on-the-fly
IMS Learning Design and adaptation

1. Learning flow-based, where the learning process is dynamically adapted to explain the contents of the course in different ways

IMS LD support
- Show/Hide elements in the learning flow
- Sequence/selection
- Providing new itineraries on-the-fly

Example UoLs
- Learning to listen to Jazz
- Geo Quiz 3
- Cándidas II
2. Content-based, where resources and activities dynamically change their actual content

**IMS LD support**
- Link to XHTML and DIV layers
- Content of pre-defined properties
- Show/Hide Environments

**Example UoLs**
- Learning Activities with conditions
- From lesson plan to LD
IMS Learning Design and adaptation

3. Interactive problem solving support, that guides the user about the next step to take in order to get the right solution of a problem

IMS LD support

- Modifying specific arguments by the tutor
- Execution of specific design-time rules

Example UoLs

- What is Greatness
- Free Style Assessment
IMS Learning Design and adaptation

4. Adaptive information filtering, taking care of appropriate information retrieval that provides only relevant and categorized outputs to the user

IMS LD support
No support
(index-search facility?)

Example UoLs
No example
### IMS Learning Design and adaptation

#### 5. Adaptive grouping, that allows ad hoc group creation and collaborative support on carrying out specific tasks

<table>
<thead>
<tr>
<th>IMS LD support</th>
<th>Example UoLs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, dynamic creation/allocation of users in administration, but hard representation</td>
<td>No example yet, but coming soon</td>
</tr>
<tr>
<td>No, dynamic creation of roles</td>
<td></td>
</tr>
</tbody>
</table>
IMS Learning Design and adaptation

6. Adaptive evaluation, where the evaluation model, the actual content and the running of the test can change depending on the student and the tutor.

IMS LD support

Pre set-up properties, with actual data and calculations on-the-fly

Example UoLs

Geo Quiz 3
Quo Builder 2
IMS Learning Design and adaptation

7. Changes on-the-fly, by a tutor or author in run-time, moving beyond the previous types which are set-up and defined in design-time

**IMS LD support**

- Yes, if it is pre designed
- No, if it implies changes on structure, method or basic parameters

**Example UoLs**

- Quo Builder 2
Extending the work

• Further analysis based on
  – A Logical Characterization of Adaptive Educational Hypermedia, Nicola Henze and Wolfgang Nejdl

• Creating and releasing further running examples
Where to find example Units of Learning:

http://moodle.learningnetworks.org

http://dspace.learningnetworks.org
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