Bridging the Gap among Cultures: The Challenge faced by Teachers on producing Content for Computer-aided Education

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SIGDOC 2008
09/2008
Outline

1. Introduction
2. Cog-Learn Pattern
3. Common Sense
4. Framework Cognitor
5. User Test
6. Future Work
Introduction

- Teachers lack experience in combining pedagogical issues with computer-aided education and Web design;
- Difficulty to edit educational content as learning objects;
- Potential for using common sense knowledge in learning objects edition.
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• **Pedagogical Patterns** (planning and sequence of the course)
• **HCI Patterns** (interaction and display of learning content; Web project)
• **Hybrid Patterns** (use of cognitive operators)
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Common Sense

- Non-expert knowledge
- Describes the culture of a certain social group in a certain age
- Can help teachers to:
  - Design contextualized learning objects
  - Create contextualized Concepts Maps
  - Fill in metadata (LOM)
  - Reuse learning objects
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Framework Cognitor

- Supports teachers on using Cog-Learn to edit content as learning object
- Supports learning objects’ reuse, interoperability and accessibility
- Offers suggestions of concepts based on common sense knowledge
Framework Cognitor - OMCS

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User Test- Preparation

- Number of users ➔ 09

Steps

♦ Short Tutorial ➔ Cognitor

♦ Purpose of test ➔ Assess:
  - The support the Cognitor Knowledge View Pattern tool gives teacher to create Concept Maps;
  - The help common sense knowledge offers teachers in identifying concepts to compose Concept Maps;
  - The resources Cognitor WISIWYG web-page editor makes available to teachers in order to elaborate learning content

♦ Questionnaire ➔ profile of users
## User Test - Profile of Users

<table>
<thead>
<tr>
<th>Have you created/designed learning material?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of users</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Number of users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master</td>
<td>4</td>
</tr>
<tr>
<td>Undergraduated</td>
<td>4</td>
</tr>
<tr>
<td>High School</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Number of users</th>
</tr>
</thead>
<tbody>
<tr>
<td>17-22</td>
<td>7</td>
</tr>
<tr>
<td>23-26</td>
<td>1</td>
</tr>
<tr>
<td>27-30</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of users</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>
## User Test - Questionnaire

<table>
<thead>
<tr>
<th>Generating the Learning Material Navigational Tree</th>
<th>1-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generation process</td>
<td>Not intuitive</td>
</tr>
<tr>
<td>Process for searching common sense related concepts</td>
<td>Confusing</td>
</tr>
<tr>
<td>Generation process results</td>
<td>Confusing</td>
</tr>
<tr>
<td>Organization of the generation process in three steps</td>
<td>Inadequate</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>4,49</td>
</tr>
</tbody>
</table>

- It was the feature best evaluated by users (Mean 4.49)
- Concept Maps ➔ Generate Learning Material Navigational Tree
### User Test - Questionnaire

<table>
<thead>
<tr>
<th>Common Sense Support</th>
<th>1-5</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Search for common sense concepts</td>
<td>Irrelevant</td>
<td>4,5</td>
<td>Relevant</td>
</tr>
<tr>
<td>Quality of the retrieved concepts</td>
<td>Bad</td>
<td>3,62</td>
<td>Good</td>
</tr>
<tr>
<td>Common sense support for structuring Concept Maps</td>
<td>Uninteresting</td>
<td>4,75</td>
<td>Interesting</td>
</tr>
<tr>
<td>Mean</td>
<td>4,29</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Second best evaluated feature in Cognitor (Mean 4.49)
- Users liked the proposal of the use of Common Sense support to bring suggestions of concepts
User Test - Cognitor Pros/Cons

- Pros
  - Automatic generation of the learning material navigational structure
  - Possibility of generating a web-based learning material without knowing HTML
  - Common Sense support for contextualizing the learning material to the learners’ reality

- Cons
  - Lack of feedback to users
  - Lack of mechanisms to prevent user errors, such as to make available to users only the functionalities which are available in the different situations of interaction
  - Bugs in text formatting
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Future Work

- Work on the usability problems found during the test
- Make the Cognitor a collaborative authoring tool
- Use common sense knowledge to support
  - The adoption of the pattern “Means the Same”
  - The fulfillment of metadata
- Perform new usability tests to keep the tool improving towards the use efficiency, efficacy and satisfaction.
Thank You!

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