Exploiting Linked Data for supporting mobile learning experiences

Davide Taibi, Giovanni Fulantelli, Marco Arrigo
National Research Council of Italy - Institute for Educational Technologies
Linked Data for Education

The Lucero project

PoliMedia

MeLOD

Globe-Town

LD for Education

Datasets

Applications

MeL_educator

EdUcational Curriculum for the usage of Linked Data

EUCLID

LinkedUp challenge

LinkedLearning conferences

LinkedUp

challenge

The Open University

DBpedia

DBpedia

BBC
Introduction

What is MeLOD?
- The MeLOD environment has been designed to support, through the use of mobile devices, the informal learning experiences that take place during the visit of a city

Technological substrate
- MeLOD exploits recent advancements in Semantic Web and Linked Open Data to support mobile learning experiences
The MeLOD environment

Analytic dashboard

RDF Triple store

Web services

mobile app

GeoNames

DBpedia
europeana
MeLOD Web Services

- Geo-located information
- Social learning activities
- Authentication and configuration

Web Services
WS: User Authentication and personalization

- **Language**
  - Dbpedia Localization

- **Topic**
  - Dbpedia Categories (e.g. Education, Geography, History, Arts, Life, ...)

- **Media Type**
  - only text
  - text and images
  - multimedia
WS: Providing geolocated Learning Material

MeLOD interlinks the DBpedia, Europeana and GeoNames datasets providing users with localized information by using the DBpedia internationalization features.

Learning content for mobile learning activities are usually prepared in advance by teachers and maintained during the whole lifespan of the application.

MeLOD exploits the huge amount of dataset in the Linked Open Data (LOD) cloud to overcome these issues, by providing contextualized updated information based on students’ location that are continuously updated.
WS: Social Learners activities

- The social activities of voting and commenting performed by students during a visit of the city are central to the pedagogical models behind MeLOD.

- MeLOD provides the possibility of enriching the learner’s profile, considering:
  - the places s/he has visited,
  - information about her/his learning interests,
  - information which is inferred by analyzing the cultural heritage sites s/he has visited
MeLOD mobile app

1. Login.

Users have to insert their username and password to access the MeLOD environment.
MeLOD mobile app

2. Setting preferences
   Students can select language, preferred media format and categories.
MeLOD mobile app

3. Browse the Map

By clicking on the “Map Menu” the point of interests (POI) near the position of the user will be shown.
MeLOD mobile app

4. Browse Categories
   a list of categories related to the point of interests (POI) near the position of the user will be shown.
# MeLOD Ontology

<table>
<thead>
<tr>
<th>User</th>
<th>Configuration</th>
<th>Session</th>
<th>SocialActivity</th>
<th>Track</th>
</tr>
</thead>
<tbody>
<tr>
<td>• this class is used to identify users within the MeLOD environment. Properties: name, surname, email, …</td>
<td>• this class represents the configuration parameters for each user in the system, storing information related to users preferences such as: preferred language, topics and media type</td>
<td>• this class represents the learning session associated to the Users. For each User there will be more sessions.</td>
<td>• This class represents the social activities performed by the Users. In this version of the MeLOD environment, the two social activities of voting and commenting have been represented.</td>
<td>• This class is used to store the information connected with all the activities carried out by the Users.</td>
</tr>
</tbody>
</table>

http://melod.pa.itd.cnr.it/ontology/
MeLOD Ontology
MeLOD dashboard

Dashboard:
- Plug-in based approach
- Providing visualization tools for helping teachers in monitoring the activities.
MeLOD dashboard

- A bar chart representing the number of actions performed by each student.
- A pie chart representing the percentage of actions performed by each student.
- A pie chart providing hints about the participation of the students to the activities under investigation by the teacher.

How students participate to each activity? Which activities are more preferred by each student? What are the most used activities by the whole class?
Known issues

- MeLOD environment integrates several information coming from different datasets. The development of such a kind of application is not problem free!

- The prototype we have developed is usable and can be experienced for testing purposes, but the creation of a real world application needs more requirements in terms of response time, results accuracy, implemented functionality.
Conclusion

MeLOD combines the results of four research fields:

- **Mobile Learning applications**, allowing users to study everytime and everywhere, supporting formal and informal learning contexts.
- **Learning Analytics**, providing specific tools to analyse students’ activities.
- **Semantic web**, including function mechanisms which are typical of the new vision of the Web.
- **Application and exploitations of the Linked Open Data approaches.**
Thanks for your attention

davide.taibi@itd.cnr.it
http://melod.pa.itd.cnr.it/