Learning Objects and learning communities

A ten-year overview on major
EU-funded projects
about Learning Objects

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EU-funded projects dealing with LOs

Indire (National Institute of Documentation for Education Research and Innovation) was involved in the following **European projects** (IST, e-content FP)

- European Treasury Browser (1998-2002)
- CELEBRATE (2002-2004)
- CALIBRATE (2006-2008)
- PENCIL (2006-2008)
- MELT (2006-2008)

Indire's major role was (and is) to design the information architecture (metadata schema, indexing language etc.) and to deal with learning communities (teachers, students, school personnel, tutors)

Indire's site: www.indire.it

The ETB project (1998-2002)

The primary goal

to bring **existing European online educational resources** within reach of teachers and pupils

Interoperable network of trusted sources (ETB quality policy and guidelines)
- Minimum costs and technical requirements (interoperability)
- Exchange of information based on metadata (mapping)

→http://insight.eun.org/ww/en/pub/insight/interoperability/learning_resource_exchange/metadata.htm

Project Co-ordinator:
European Schoolnet http://www.eun.org

ETB Partners:
INDIRE, Italy http://www.bdp.it/
The Danish IT Centre for Education and Research, Denmark http://www.uni-c.dk/
Joint Research Centre, Italy http://www.jrc.it/
Lunds Universitet, Sweden http://www.lu.se/
Humboldt- Universität, Germany http://www.educat.hu-berlin.de/
Fundación Universidad Empresa, Spain http://www.uned.es/
FWU Institut für Film und Bild in Wissenschaft und Unterricht Gemeinnützige Gmbh, Germany http://www.fwu.de/
MAKASH - Advancing CMC Applications in Education, Culture and Science, Israel http://www.makash.ac.il/
Lambrakis Research Foundation, Greece http://www.lrf.gr/
Consiglio Nazionale delle Ricerche, Italy http://www.itd.ge.cnr.it/
InformationsZentrum Sozialwissenschaften derArbeitsgemeinschaft SozialwissenschaftlicherInstitute e.V., Germany http://www.gesis.org/IZ/

Project site: http://etb.eun.org/etb/index.html

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The ETB project (1998-2002)

<u>The system policy</u>

The local autonomy of each ETB-repository was assured and they could maintain their own editorial policy on what kind of records were retrieved from and submitted to the network.
This meant that local users had access to **more material** in their interest fields with maintained quality of these resources.

At the **ETB Native Repository** all users could find and insert quality resources to the ETB-network. This material would pass through an editorial control before being posted to the network.

User satisfaction was important, therefore teachers and students were invited to **insert comments** on **the use of material** and its **transferability**. This would help other users chose their material.

Multilinguality

Users were eased by the use of their **own language**. It was possible to insert material in **all languages**. The user's interface was provided in five European languages (English, French, Spanish, German and Italian).

Information retrival
Users could browse through the subject classification of the Thesaurus. This allowed users to find multilingual material i.e., if the search was done only in one language it gave results in other languages too. Thesaurus helped also in having a better information retrieval (quality of system answer).

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The ETB project (1998-2002)

Rational/engineering model of Knowledge Management

- Precise information retrieval (focus on the searching/finding)
- Technical interoperability of metadata
- Semantic interoperability of vocabularies (mapping)
- Quality of *digital resources* (not yet LOs)
- Stress on standards
- Communities invited to comment on the use

Production of interoperability tools (thesaurus, technological framework, quality guidelines) to be resued

Curiosity of teachers, but not massive use

Conoscenza studio e valorizzazione del patrimonio "diffuso" locale:l'orale,lo scritto e le opere [French]

Language of resource is: *French*

Description: *Far conoscere a coetanei francesi luoghi e storia di Pozzuoli paragonandoli a siti "romani" nella reg Languedoc Roussillon. "Procolo" ragazzo immaginario di Pozzuoli, recandosi in Francia, ritrova radici comuni, latine.* [French]

Thesaurus term(s): *patrimonio culturale, studi locali, storia orale, cultura popolare, lingua straniera, lingua france*

Posted to ETB network: 2002/10/06

Il territorio, le tradizioni culturali e lo sviluppo dell'imprenditorialità giovanile

Language of resource is: *Italian*

Description: *collaborazione scuola famiglia*

Thesaurus term(s): *studi locali, artigianato, educazione all'imprenditorialità, gioventù, cultura popolare, turismo educative*

Posted to ETB network: 2002/10/06

COSTUME TRADIZIONI POPOLARI [Spanish]

The ETB project (1998-2002)

Conceptual interoperability

```
##########
# Mapping of thesaurus
##########

dc:subject:15th century -> local:subject:storia moderna
dc:subject:16th century -> local:subject:storia moderna
dc:subject:17th century -> local:subject:storia moderna
dc:subject:18th century -> local:subject:storia moderna
dc:subject:19th century == local:subject:ottocento
dc:subject:20th century == local:subject:avvenimenti storici del XX secolo
dc:subject:20th century == local:subject:Novecento
dc:subject:21st century -> local:subject:storia contemporanea
dc:subject:abstraction == local:subject:astrazione
dc:subject:accessories -> local:subject:abbigliamento e accessori
dc:subject:acoustics == local:subject:acustica
dc:subject:actor == local:subject:attore
dc:subject:adolescence == local:subject:adolescenza
dc:subject:adolescent == local:subject:ragazzi
dc:subject:adult == local:subject:adulti
dc:subject:adult-child relationship == local:subject:rapporto bambino adulto
dc:subject:adulthood == local:subject:età adulta
dc:subject:advertising == local:subject:pubblicità
dc:subject:aeronautics -> local:subject:scienze tecnologiche
dc:subject:aesthetic education == local:subject:educazione estetica
dc:subject:affective development == local:subject:sviluppo affettivo
dc:subject:Africa == local:subject:Africa
dc:subject:aggressiveness == local:subject:aggressività
dc:subject:agriculture == local:subject:agricoltura
dc:subject:agronomy == local:subject:agraria
dc:subject:AIDS -> local:subject:malattia
dc:subject:air == local:subject:aria
dc:subject:airport == local:subject:aeroporto
dc:subject:Albania == local:subject:Albania
dc:subject:Albanian language == local:subject:lingua albanese
dc:subject:alcoholism == local:subject:alcoolismo
dc:subject:algebra == local:subject:algebra
dc:subject:America == local:subject:America
dc:subject:American English language -> local:subject:lingua inglese
dc:subject:amphibian == local:subject:anfibi
```

Dublin core item: subject
ETB term → local national
classification/thesaurus

Some data about mapping
• About 60 classification systems conceptually mapped to the ETB thesaurus (1,300 terms)
ETB T. → Thesaurus Motbis (~ 13,000 terms)
ETB T. → EET Thesaurus (~ 2,600 terms)
ETB T. → LGI Thesaurus (~ 3,600 terms)

Correspondence quality value

18%   1%   7%

74%
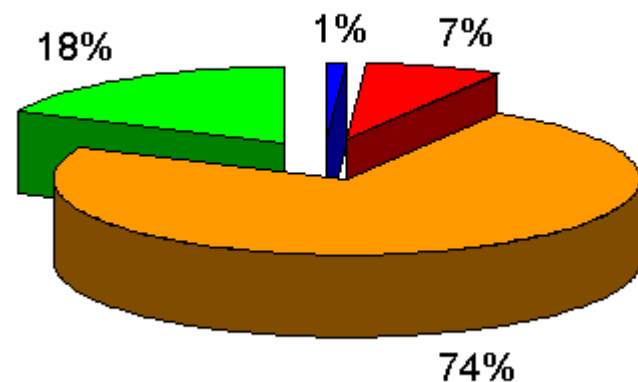
■ 0 relations ■ L relations ■ M realtions ■ H relations

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The CELEBRATE project (2002-2004)

Context eLearning with broadband technologies

The primary goals

- Strategic large-scale experiments in learning
- System must be based on pedagogically sound principles
- Operational and scalable technologies
- Pull together key actors from all parts of value chain
- Remote access to a broad range of digitally rich material (collections from museums, simulation facilities, digital video, etc.)
- More integration than pure R&D
- Focus should be on **reusing** existing and newly developed learning resources (instead of developing them from scratch)
- Test beds of 500+ schools

Project Co-ordinator:
European Schoolnet http://www.eun.org

CELEBRATE Partners:
Belgium (2)
Finland (4)
France (3)
Hungary (1)
Israel (1)
Italy (3)
Netherlands (1)
Norway (2)
Spain (1)
UK (3)

Project site: http://celebrate.eun.org/eun.org2/eun/en/index_celebrate.cfm

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The CELEBRATE project (2002-2004)

The system policy

Negotiation with key actors and users of Los
Summer schools, focus groups, experimentations, authoring support

Interoperability of LOs (SCORM requirements) and semantic interopearbility(ETB thesaurs expanded into 12 languages), standards (LOM schema), mapping with previous Application Profiles

User participation is crucial for CELEBRATE. The active role of teachers is useful not only for designing "good" (or pedagogically sound) Learning Objects but also in the system design

Multilinguality

CELEBRATE makes it possible to insert material in **all languages**. The user's interface is multilingual. Search features are via free text search and via **Thesaurus terms**

Pedagogical design
It is important to understand how teachers actually use LOs and to what extent a LO can enrich traditional teaching

Notes from II CELEBRATE summer school (Sept. 2004)

Use of LOs in the classroom
Teachers report that LOs can be used in different ways in the classroom.
Some LOs can be used by the teacher in an explanation to the whole class,
e.g. using a computer connected to the beamer.
These LOs involve several types:
-a LO that is used to explain to students how to use a specific tool
(e.g. a triangle for measuring angles)
- a collection of examples that can be used in a teacher's demonstration
-a LO that is used to stimulate class discussion
(e.g. a LO on gardening is used to discuss colors).

Most LOs can be used as exercises for pupils. There are several ways
in which this can be done:
-in a game, students can compete with each other on one specific skill
-an exploration or collection can be used by students
to explore one specific topic or skill. Exploration can be done together,
in small groups or perhaps larger groups.
-using a LO as an object of discussion. Often this type of use
involves using a LO out of its original context,
e.g. a journey planner is used in an English lesson
to plan a journey together in English.

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The CELEBRATE project (2002-2004)

Pragmatic model of Knowledge Management

- Experimentation with schools
- Pedagogical soundness
- Fuel to online cooperation among learning communities
- Reuse of *digital resources* (now LOs)
- Stress on system components
- Communities involved in the creation of both the container (portal) and the contents

Interoperability is a must

Enthusiasm of teachers, medium use and potential for massive use (important inputs by teachers)

Cooperation between public and private sector enrich the system design

Need for a Digital Right Management Policy (publishers)

A Learning Object **produced by a teacher** from Hungary by using the Authoring tool provided by CELEBRATE

The CALIBRATE project (2005-2008)

(Calibrating eLearning in Schools)

The primary goals

☐ to support the collaborative use and exchange of learning resources
in schools by allowing teachers to access resources in a federation of learning repositories
supported by six Ministries of Education
(Austria, Estonia, Hungary, Lithuania, Poland and Slovenia)

☐ to support the release of a New **European Learning Resource Exchange (LRE)**
launched by the EUN in 2006 (How to join →
http://insight.eun.org/ww/en/pub/insight/interoperability/learning_resource_exchange/how_to_join.htm)

INDIRE was involved in 2005 in a feasibility study on the CALIBRATE project, which is conceptually a
continuation of the CELEBRATE project objectives

Project Co-ordinator:
European Schoolnet http://www.eun.org

CALIBRATE Partners: http://calibrate.eun.org/ww/en/pub/calibrate_project/partners.htm

Project site: http://calibrate.eun.org/ww/en/pub/calibrate_project/home_page.htm

The CALIBRATE project (2005-2008)

Relational model of Knowledge Management

- Creation of a solid educational environment (LRE)
- Cooperation among learning communities
- Tools provided for creating contents
  - 'learning toolbox' for teachers: is a **collaborative learning environment** which allow teachers and pupils to develop community-driven learning content repositories and also to carry out collaborative learning activities using both content developed by the schools themselves and resources found using the CALIBRATE system

Interoperability granteed

Potential exploited (in Eastern countries the market is growing)

High level of combined technological/pedagogical skills in teachers (this may affect teacher training?)

Search for learning resources

Keywords :

Language :
French
Finnish
Hebrew
Italian
Norwegian

Age range

min : ...

max : ...

Search

A screenshot of the FIRE (**Learning Resource Exchange**) supported by EUN.
A new release will be launched in late 2007

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The MELT project (2006-2008)

(Metadata ecology for learning and teaching)

The primary goals

- to enrich the available content with **metadata that reflects the actual use of each resource** by teachers/pupils in different learning contexts
- to support the **wider use of this content and the development of the European content market**

Existing technologies integrated into the system:

- Brokerage System that supports federated searching so that MELT content can be made freely available to schools all over Europe
- Semantic interoperability enforced into technological standards

New approaches:

- social tagging by teachers in order to share resources and to reflect the actual use of resources in educational contexts
- automatic metadata generation
- automatic translation of metadata (test phase)

Project Co-ordinator:
European Schoolnet http://www.eun.org

MELT Partners:
Katholieke Universiteit Leuven/ ARIADNE Foundation (BE), Bundesministerium für Bildung, Wissenschaft und Kultur (AT) Cambridge-Hitachi (UK), Danube University Krems (AT), FWU (DE), INDIRE (IT), Ministerio de Educación y Ciencia (ES), Ministry of Education, Science and Culture Iceland (IS), University of Ljubljana (SI), National Board of Education Finland (FI), National Centre for Technology in Education (IE), Europese Hogeschool Brussel (BE), EDUCATIO/Ministry of Education (HU), Swedish Agency for Flexible Learning (CSE), Myndigheten för skolutveckling (SE), Tiger Leap Foundation (EE), XTEC Xarxa Telematica Educativa de Catalunya (ES), Skolavefurinn (IS)

Project site: http://info.melt-project.eu/ww/en/pub/melt_project/welcome.htm
April 24th 2007, Bologna Bookfair, ELEONET conference

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The MELT project (2006-2008)

Ecological model of Knowledge Management

- Integration of bottom-up and top-down description approaches
- Cooperation among learning communities and educational repositories/providers
- Stress on networks of schools and experts
- Market creation actively supported by Ministries of education in 12 European countries: Finland, Italy, Austria, Spain, Catalonia, Germany, Sweden, Ireland, Estonia, Slovenia, Hungary, Belgium
- Public and commercial partners

Interoperability guaranteed
Standards compliance
Previous results exploitation and improvement
Systematic approach
Users' strong involvement (authorship supported)
Pan-European perspective (12 EU Ministries + global providers)
Digital resources networked (MELT repository will be connected with the LRE and ARDIADNE networks)
Increasing use of digital resources for **individualized education**

melt
LEARNING RESOURCES FOR SCHOOLS

More Information:
http://melt-project.eun.org

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The PENCIL project (2006-2008)

(Permanent European Resource Centre for Informal Learning)

The primary goals

- to study how to transform informal learning into reusable learning resources/LOs on the web

- to involve informal science education agencies and networks (museums, associations) and to have them cooperate with institutional bodies (Ministries of education)

- to conduct a motivation study amongst the youngsters participating in the project

- to identify the elements that make the change in their attitude towards science

- To build up the **European science education portal** aiming at becoming the reference for innovative science teaching

Project Co-ordinator:

European Schoolnet http://www.eun.org and Ecsite http://www.ecsite.net/new/

PENCIL Partners:
14 education agencies (Ministries, museums, science associations)

Project site: http://info.melt-project.eu/ww/en/pub/melt_project/welcome.htm

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The PENCIL project (2006-2008)

Transformational model of Knowledge Management

Focus on a specific topic: science education (research shows a general disaffection of pupils towards science education, mathematics, physics)

Transformation of informal learning into digital resources for students

Integration of multiple perspectives (psychological, organizational, action-research, pedagogical)

Strong involvement of teachers

Cooperation among formal and informal educational agencies (mixed approach)

Screenshot of the eXplora Portal

http://www.xplora.org/ww/en/pub/xplora/homepage.htm

Thank you for your attention!

Questions?

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