

**Show and tell session - Lessons learned:**

# **Analysis of teachers browse and search strategies**

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EUN

Oct 2 2007 Århus, Dk



# Looking back to see the future

- How can we make the search of learning resources better for teachers?





# Looking back to see the future

- How can we make the search of learning resources better for teachers?
- Let's see what is happening now!
- Calibrate portal is currently piloted by 78 schools in Hungary, Austria, Estonia, Czech Republic, Lithuania and Poland
- Vigorous logging of all the user actions





## CALIBRATE - find & use free learning resources and assets from all over Europe

### Use resources

#### My favourites

- ➔ [bilsa \(7\)](#)
- ➔ [bug \(6\)](#)
- ➔ [cinema \(2\)](#)
- ➔ [elokuva \(1\)](#)
- ➔ [fish \(1\)](#)
- ➔ [flower \(2\)](#)
- ➔ [flowers \(1\)](#)
- ➔ [menkat \(1\)](#)
- ➔ [pollination \(1\)](#)
- ➔ [project \(1\)](#)
- ➔ [tags film \(1\)](#)
- ➔ [tsunami \(3\)](#)
- ➔ [water \(2\)](#)
- ➔ [\(1\)](#)

#### Add a resource

- ➔ [Upload your resource/asset](#)

#### Provide feedback

- ➔ [Give feedback on a resource](#)

#### Toolbox

- ➔ [Work collaboratively with resources](#)

### Find learning resources & assets

#### Browse by curricula

Choose

#### Browse to your resource

- |                           |   |                                  |
|---------------------------|---|----------------------------------|
| <a href="#">Art</a>       | <a href="#">History</a>                 | <a href="#">Music</a>            |
| <a href="#">Biology</a>   | <a href="#">Informatics/ICT</a>         | <a href="#">Natural sciences</a> |
| <a href="#">Chemistry</a> | <a href="#">Language and literature</a> | <a href="#">Physics</a>          |
| <a href="#">Geography</a> | <a href="#">Mathematics</a>             | <a href="#">More</a>             |

#### Search learning resources/assets

#### [Advanced search for learning resources and assets](#)

#### The most popular search terms

- [biology](#) [electric & magnetic fields](#)  
[english](#) [fizika](#) [london](#) [matem](#)  
[matemaatika](#) [matematika](#) [math](#) [test](#)  
[triangle](#) [vector](#) [More](#)

### Get info & advice

#### Help

- ➔ [Video tutorials](#)
- ➔ [How to use this site](#)
- ➔ [More about content](#)
- ➔ [Technical advice](#)



#### Information

- ➔ [About CALIBRATE](#)
- ➔ [Project news](#)
- ➔ [Contact](#)

#### Pedagogical support

- ➔ [Lesson plans](#)
- ➔ [CALIBRATE schools](#)
- ➔ [Pedagogical library](#)
- ➔ [Resource showcase](#)

### Resource spotlight





# How do teachers search?

<b>Within 3 months searches initiated</b>	<b>3910</b>
● Most browsing	1771
● Advanced search	1322
● Basic text	593
● Popular search term	224





14 resources found

Title	Age range	Rate
<a href="#">Dr.lyd</a> Language: no Dr.ly ... <a href="#">more details</a>	9-18	<a href="#">Rate</a>
<a href="#">Intervals (Music)</a> Language: en <b>Add to favourites!</b> It helps you find your resource again. Add keywords (separate them by comma). You can also edit them later. <input type="text"/> Alternatively you can also select the keywords you have previously used: <a href="#">bilisa (7)</a> , <a href="#">bug (6)</a> , <a href="#">cinema (2)</a> , <a href="#">elokuva (1)</a> , <a href="#">fish (1)</a> , <a href="#">flower (2)</a> , <a href="#">flowers (1)</a> , <a href="#">menkat (1)</a> , <a href="#">pollination (1)</a> , <a href="#">project (1)</a> , <a href="#">tags film (1)</a> , <a href="#">tsunami (3)</a> , <a href="#">water (2)</a> , (1), You can also enter a comment: <input checked="" type="checkbox"/> Make comment public <input type="text"/> <input type="button" value="Ok"/>	12-18	<a href="#">Rate</a>
<a href="#">Intervals (Music ... <a href="#">more details</a></a>		
<a href="#">Intervaller (Musikk)</a> Language: no Intervaller (Musikk ... <a href="#">more details</a>	12-18	<a href="#">Rate</a>
<a href="#">Dr.Sound</a> Language: en	9-18	■ ■ □ □ □





cz | de | en | et | fi | hu | it | nl | pl | sl

# calibrate

Learning Resources for schools

Welcome Riina   Edit your details   Logout

Find  Resources  Assets

Search for

Subject

Age range

Language

- no text
- čeština
- dansk
- Deutsch

Provider

Only find LeMill editable resources

**Launch search**



# How do teachers search?

**Within 3 months searches initiated      3910**

- Advanced search      1322
  - LANGUAGE      1128
  - FT\_KEYWORD      716
  - SUBJECT      653
  - MAX\_AGE      325
  - MIN\_AGE      324
  - Without any criteria      54





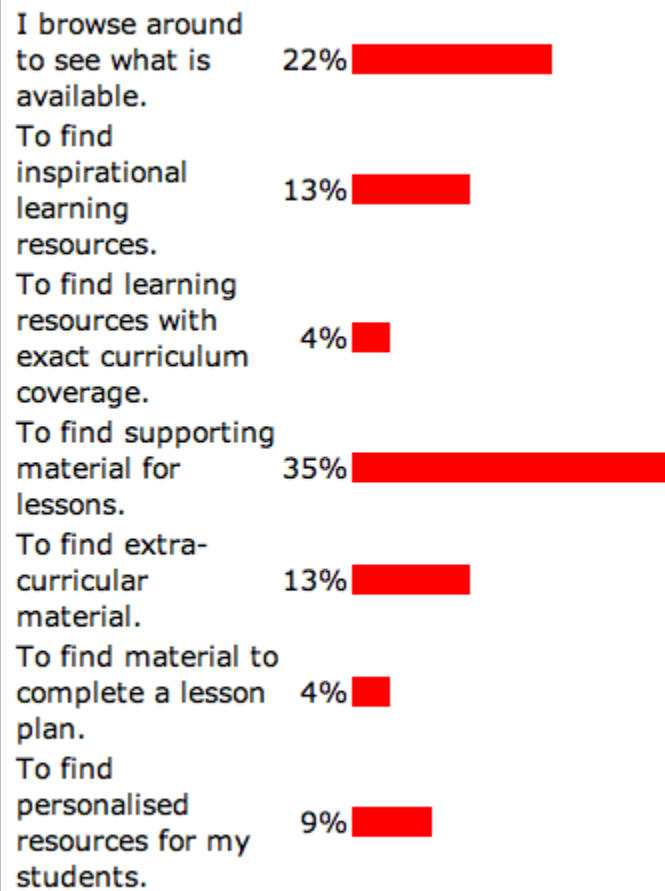
# What did this help us for?

- It became clear that teachers prefer browsing.
- It still is not is clear why?
  - Maybe because they are not sure what to find?

# What did we learn from this?

- It became clear that teachers prefer browsing.
- It still is not clear why?
  - Maybe because they are not sure what to find?
- **Future: more focus on information seeking tasks**

## Digital learning resources: what do I mostly look for?



46 votes total.



# What did we learn from this?

- As browsing is like, new ways to browse resources might be appreciated
  - new resources,
  - travel well,
  - most bookmarked



Welcome Thomas Maier

### Find resources

Language

Subject

Resource type



### Find by tags

.net advertising **ajax** apple  
architecture **art** article  
articles artist audio **blog**  
blogging **blogs** books  
**business** car career  
comics community computer

- » See [all tags](#)
- » Find out [more about tags](#)

### Find by subject

- » Art and culture
- » Biology
- » Chemistry
- » Geography
- » Mathematics
- » Sports and leisure
- » Knowledge in general

[» All subjects](#)



## Welcome to the new Melt Project



Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam nec mi et justo ornare lacinia. Maecenas tristique tempus eros. Donec vestibulum, nisi at venenatis adipiscing, sapien diam ultricies diam, at accumsan libero erat at risus. Proin sapien libero, placerat at, imperdiet eget, feugiat id. Donec vestibulum, nisi at venenatis

[subscribe the newsletter](#)

### Featured

### Travel well

### Most bookmarked



#### This is the sample of a resource title

Ornare lacinia. Maecenas tristique tempus eros. Donec vestibulum, nisi at

**Related Tags:** computer - science - art - software - schools

**Licence:** Creative commons



[Add to favourites](#)



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# What did we learn from this?

- As browsing is like, new ways to browse resources might be appreciated
  - new resources,
  - travel well,
  - most bookmarked
- Search interface with language, subject and resource type is available at all times.



Welcome Thomas Maier

### Find resources

Language

Subject

Resource type



Additional filters:

Age range

License type

Media format



### Search results

You searched for: **music**, the system found **34 resources** and **2324 assets**



### Find by tags

.net advertising **ajax** apple  
architecture **art** article  
articles artist audio **blog**  
blogging **blogs** books  
**business** car career  
comics community computer

» [See more tags](#)

» [Find out more about tags](#)

### Find by subject

» Art and culture  
» Biology  
» Chemistry  
» Geography  
» Mathematics  
» Sports and leisure  
» Knowledge in general

» [All subjects](#)



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[Add to favourites](#)

« Previous 1 2 3 4 5 6 7 8 9 10 11... Next »



# Lessons learned

- It is important to follow how the users interact with the portal
  - What is searched
  - What is actually viewed
  - And what is found useful (e.g. bookmarked, tagged, rated)

- Example of 31 days

View item	2481
Search	1276
View details	347
View all details	325
Bookmark	127
View Ratings	46
Rate	10
Delete bookmark	29
<b>Total interactions</b>	<b>4641</b>

- This can help determinate the **levels of user engagement**





# example

- Number of searches launched: 1276
- Number of items viewed: 2481
- Bookmarked items: 127

Does this mean that teachers don't really search like Google/Yahoo! users (only clicking on the top one)?

Or

Does it mean bad recall:

- the ratio of the number of relevant objects retrieved to the total number of relevant objects in the repository





# Opportunity for comparison

**If other repositories collected similar attentional metadata from users**

-> it could lead to **interesting comparison** of users behaviour

- Contextual Attention Metadata framework could be used as an export format
- Based on the idea of Attention Metadata
- Adapted for the context of learning resources
- Implemented in MELT
- <http://ariadne.cs.kuleuven.ac.be/cama2007>





[info.melt-project.eu](mailto:info.melt-project.eu)



**Thanks!**  
**[riina.vuorikari@eun.org](mailto:riina.vuorikari@eun.org)**

**Show and tell session 2 - Lessons learned:**

# **Teachers' Multilingual Tagging behaviour**

Riina Vuorikari

EUN

Oct 3 2007 Århus, Dk



# Web 2.0 is out there!

info.melt-project.eu



Currently tracking 17.9 million sites



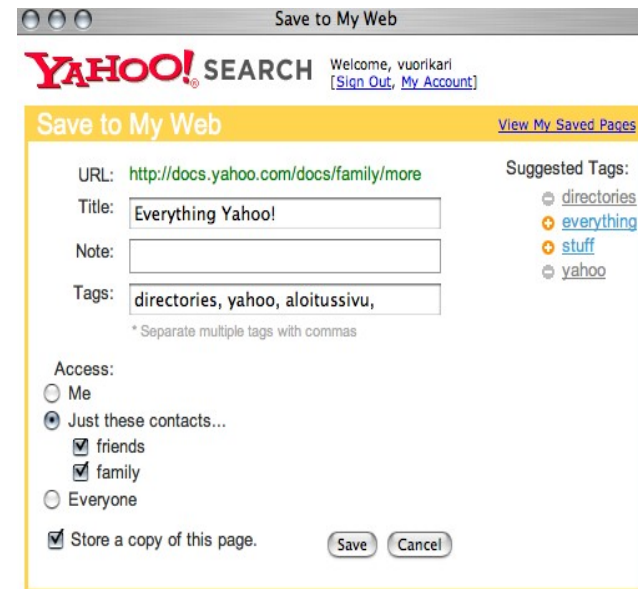
Available as [RSS 2.0](#) and [Atom](#)





# Social bookmarking

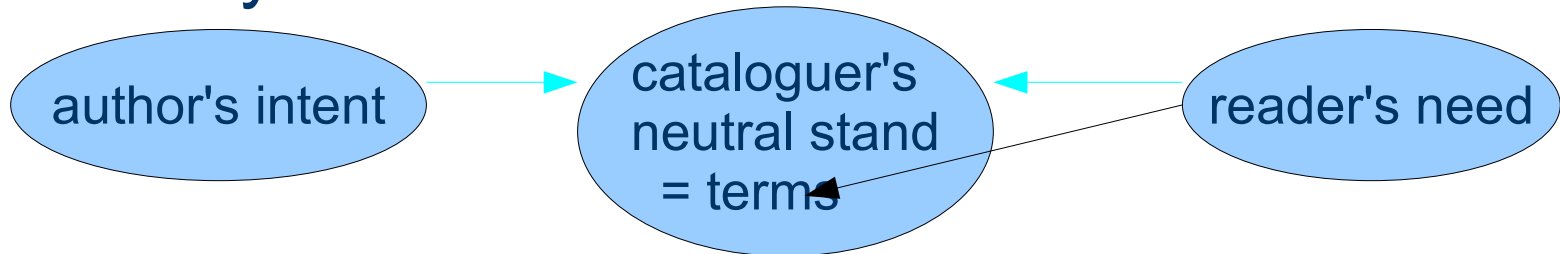
- Bookmarking on the Web
  - access from everywhere
- Own keywords
  - easy to find it again
- Sharable
  - private, with a group, everyone
- Serendipitous access
  - access others bookmarks, tag-cloud, recommendations



# Classification and cataloguing

- Been around since the Library of Alexandria, Aristotle

- Priority on author's intent



- naming the object to **distinguish** it from others, **grouping** it with similar entities
- restrictive, rather than expansive





# Folksonomic approach

- **Whose** intent and interpretation is it anyway?
  - author's, indexer's or reader's
- **Different meanings and purposes exist**
- Folksonomic approach gives priority to **user's intent, hence “user-given”**
- Many names: social categorisation, sos. classification, sos. indexing, tagging, annotating





# MELT approach

- Metadata Ecology for Learning Technologies
- Aims at co-existence of expert classification and user-given tags for learning resources
- Can user-given tags help to describe the resources better (educational type, actual use) and help in discovering them?



Welcome Thomas Maier

### Find resources

Language

Subject

Resource type

GO

### Find by tags

net advertising **ajax** apple  
architecture **art** article  
articles artist audio **blog**  
blogging **blogs** books  
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comics community computer

[» See more tags](#)

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[» All subjects](#)



Additional filters:

Age range

License type

Media format

GO



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Ornare lacinia. Maecenas tristi  
**Related Tags:** computer - sci  
**Licence:** Creative commons

**Add to favourites !** It helps you to find your

Add keywords. (separate them by comma). You c

You can also enter a comment about this resour

Make this comment public



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[Add to favourites](#)



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[Add to favourites](#)

[« Previous](#) 1 2 3 4 5 6 7 8 9 10 11... [Next »](#)



LEARNING RESOURCE FOR SCHOOLS

**YOUR COMMENTS ON:**

**This is the sample of a ressource Title**

Your rating 

Rating notes

Language used to fill this form

Suitable for learners aged  -

[➔](#)

Terminé



# Keep found things found!

- Bookmarking an interesting learning resources is an easy way to keep it readily accessible at a later point of time.
- Bookmarking it in favourites folder allows the access to it without any hassle later.
- In the favourites folder one can also add your own rating on it!





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[your bookmarks](#) | [your network](#) | [subscriptions](#) | [links for you](#) | [post](#)

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  - » [show](#) | [hide](#) [bundles](#)
  - » [bundle tags](#)
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# Access them easily again!

- Adding own keywords/tags to bookmarks helps keep them organised, and reminds about their content at a blink of an eye.
  - Keywords can remind of the topical area, of how you want to use it, with what age of students and in what way. These keywords are **users**: they decide what and in which language(s)!
- Apart from keywords, notes can also be add
  - Comments become handy when shared with other teachers. This might give a good idea on how a learning resources can be used!





All your items (98)  del.icio.us

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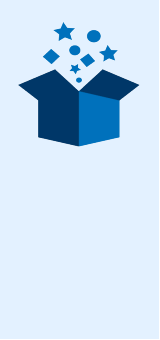




# Share them with other!

- Favourites folder with all bookmarks is shareable with others.
- Sharing favourites folders with others is a great way to let them know about good resources that you found.
- Keywords of your favourites can also be shared
  - In this way, for example, students can find a pre-selected collection of resources that is prepared for them in advance.





« earlier | later »

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<a href="#">rgarcia5</a>	↻
<a href="#">uyulala</a>	↻

mutual connection ↻  
recent fan ★





# Find interesting resources!

- Isn't it just very interesting to see what resources other teachers have found?
- The number "saved by xx others" after the resource indicates the number of other teachers who have saved the resources in their favourites. Maybe it is something that you also want to take a look at?
  - A good hint like that from a fellow teacher is not to miss!





# Data source 1

- January 24 to April 21 2007
- 77 teachers /173 total participating
- 459 bookmarks
- 417 multilingual tags
- 320 different learning resources





## Data source 2

info.melt-project.eu

- June 2007
- 13 focus group teachers of the MELT project
- Test on the descriptiveness and usefulness of keywords for 5 LOs
- 20 English thesaurus terms
- 39 multilingual tags (11 in Hu, 7 in De, 7 in En, 6 in Pl, 4 in Et, 1 in Fi)



Learning resource name: **a Healthy Meal**

Description: This interactive learning resource is designed to help students to prepare a meal following nutritional recommendations. Based on the Finnish model of nutritional recommendations called the Plate Model, the resource can be applied to the different dietary needs of a wide range of people and demonstrates how much the energy content of a meal differs depending on the included foods and portion sizes. The objective of the programme is also to assist people with ongoing weight management as well as comprehensive and healthy nutrition.

[http://www.edu.fi/oppimateriaalit/healthy\\_meal/](http://www.edu.fi/oppimateriaalit/healthy_meal/)

Audience: **Teacher**

Age group: **9 and above context**

Resource type: Exploration, drill and practice

Format: **Application/swf, text/html**

---

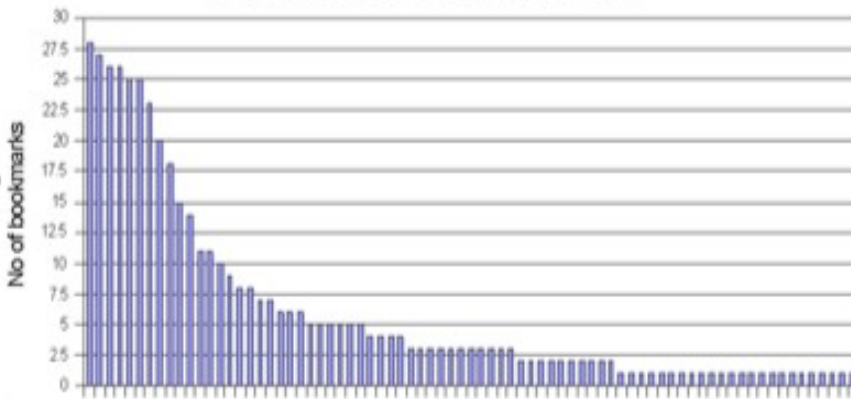
1 \*Which of these keywords do you find useful and descriptive for this learning resource? You can choose as many as you want in any language.

- education
- Ernährung
- Essen
- food pyramid
- food pyramid prepare meal
- Gesundheit
- Gesundheitserziehung
- health
- health education
- healthy meal
- terveyskasvatus



# Distribution of bookmarks

Distribution of bookmarks per user



- Average: 6 bookmarks
- Wide distribution:
  - 10% “Super users” more than 20
  - 15% 20-6 bookmarks
  - 45% 6-2 bookmarks
  - About 30% only experimented (1)





# Language analysis

- Out of 417 tags many were with **multiple terms**, when separated we found 585 terms
- 1/3 in Hungarian
- 26% in English, even though none of the users were native English speakers
- 1/3 in German and Polish





# Language analysis





- The language was right in about 70% of cases (from the interface), and found out that...
- ...users tag in many different languages:
  - at the same time (e.g. Baum, arbre, tree)
  - at different times (once in Pl, other times in En)
  - use the interface in different languages (seems like not only to test)





# Does the language matter?

**17.** What do you think when you see the keywords in many languages?

I love it!		2	15%
It's useful		4	31%
I don't care		0	0%
I find it confusing		6	46%
I hate to see the keywords in languages that I don't understand		1	8%
Total		13	100%

- Need for better ways to identify the language
  - Give rules (if the user first preferred languages is.., then..)
  - Automate the recognition of languages
  - Out-source it to users





# “Travel well” tags

- About 13% of tags contain a general term, a name, place
- e.g. EU, Euroopa, Euroopa, Europa, europe, geograafia, Pythagoras, etc.
- We hypothesise that this type of tag can be well understood without translation, so we call it “travel well” tag





# So do users find tags useful?

- Better question might be, do users find keywords useful;
  - Descriptive, and
  - help users with the potential use of it?
- Somewhat...
- ..35% of the keywords (both thesaurus and tags) were found descriptive and 27% were found helpful to the use of the resource.



# Devil is in the details...

Type	Lang	Keyword	% of votes
Tag	En	healthy meal	100%
Thesaurus	En	health education	77%
Tag	En	EU	77%
Tag	<u>Pl</u>	Europa	62%
Thesaurus	En	physics	85%
Thesaurus	En	mathematics	92%
Thesaurus	En	mathematics	92%
Tag	En	GeoGebra-program	62%
Thesaurus	En	Geography	92%
Thesaurus	En	Island	69%

Table 2. The two most popular keywords for each resource





# Usefulness of tags..

- Overall, the thesaurus terms performed better than the tags,
- However, it can be argued that tags, after all being produced with no outlay, showed an overall encouraging and potential gain in overall usefulness!





# What's the point of travel well tags?

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- If those tags need no translation or language filtering to be understood, and ..
- ..if they can be identified
- We can be sure to show at least some tags to users
  - whose language preferences we don't know, and
  - in which language there are no tags or keywords available.





## So what is needed?

- **HIDE ALL BUT THE RIGHT STUFF!**





# So what is needed?

- **HIDE ALL BUT THE RIGHT STUFF!**
- In the tagging interface (guided tagging)
  - Show tags in all languages?
  - Show only travel well tags?
  - Show only tags in users' preferred languages
- While viewing the tags
  - In a tag cloud
  - For social navigation (resource-user-tag)
  - Q: does the system translate tags or only when a user-given translation exist?





# Future studies

- Similar language and semantic analysis are planned for a more thorough data in 2008
- Moreover, our goals are to find out:
  - How do users use the tags (e.g. language and tag convergence) ?
  - How are tags and the relation resource-tag-user used for discovery?
  - Identify teachers information seeking tasks and a best fit for a retrieval system.





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**Thanks!**  
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