

Consolidating collections of learning resources using APML

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Abstract. This paper explores how a group of teachers (16) create collections of digital learning resources using tagging tools. We study two different tools: an educational portal (MELT) and del.icio.us, and then propose a way to integrate the resources and tags from del.icio.us to the MELT portal using Attention Profiling Mark-up Language (APML). This allows a higher level of integration, and thus enhances the interplay among a variety of educational services.

Keywords: learning resources, tagging tools, tags, teachers.

1 Introduction

Teachers' use of digital content has been studied by [1] and [2]. To support and enhance their teaching practices, teachers acquire a variety of digital content from national and regional educational repositories (33%), use search engines on the Internet (28%), create their own content (21%) and use schoolbook publishers (7%)¹. In the context of the MELT project² we focus on teachers' access to a federation of educational repositories and to digital multilingual content.

Less attention has been paid to studying comprehensively what kind of sources of digital resources teachers use. [3] studied learning resource repositories to analyse their barriers and enablers and note that repositories are part of the repertoire of tools that individuals and communities use to achieve learning goals. Therefore, they claim, the interplay between repositories and existing tools has to be considered. We are interested in such interplay between both the official resources offered by Educational Authorities³ and what teachers find elsewhere on the Internet. The latter could be, for example, links to educational resources elsewhere on the Web or content produced by loose communities of practices who share common interests.

In our work we are interested in capturing primary and secondary school teachers' attention in using such a wide variety of digital content. Capturing and taking

¹ Replies based on 45 European primary and secondary teachers participating the MELT project

² MELT project info at <http://info.melt-project.eu>

³ More information on LRE partnerships is available at: <http://lre.eun.org>

advantage of users' interactions with the content (e.g. downloading, buying, listening, reading feeds) and users' reactions to that content (e.g. ratings, reviews, tags) is called capturing "attention data". It can be a valuable resource that reflects users' interests, activities and values, and thus serves as a proxy for their attention. Contextualized Attention Metadata (CAM) schema is built upon AttentionXML with an extension that allows capturing observations about users' activities; an example is given to trace teachers' and learners' use of the Web and digital repositories to support learning [4]. Attention Profiling Markup Language (APML⁴), on the other hand, offers a way for a user to create a personal Attention Profile, which is portable, sharable and captures users' attention related to different services.

All these specifications serve the same goal; allowing users to collect their attention and track their participation in a transparent manner while using available tools based on open standards. In this paper we focus on how we could use the existing new specifications to offer teachers a more integrated access to what they have paid attention to, i.e. their own collections of learning resources that they have created both on a digital resources portal like MELT⁵ and on del.icio.us⁶. In Section 2 we describe our case study on how teachers have used these two tagging tools to create collections of learning resources. Section 3 proposes an early idea for an integration using APML. Section 4 gives a conclusion and discusses the future work.

2 Exploratory case study on teachers' bookmarks in del.icio.us and MELT

To advance our goal to gain better understanding on teachers' usage of digital content from a variety of sources, we undertook an exploratory case study. In this initial investigation we study their collections of digital bookmarks in a real-life context of the MELT portal (*hereafter the portal*) and del.icio.us.

2.1 Method

The selected 16 teachers have both an account on the portal and on del.icio.us. They are primary and secondary teachers in science, language learning and ICTs from Finland, Estonia, Hungary and Belgium. Seven are females and nine males. One participant is under 30 years old, eight between 30-40 years, five between 40-50 years, two between 50 and 60 years old. Most of them were first introduced to del.icio.us during a summer school in 2007. In March 2008 they were invited to create a profile on the portal, where they indicated their country, interested subject areas and languages they speak. Moreover, the portal collects attention metadata regarding the learning resources bookmarked on the portal (posts). This includes information about the resource itself in LOM and the tags applied. We additionally have asked for their del.icio.us usernames to be part of this small study.

⁴ APMP, available at: <http://www.apml.org/>

⁵ MELT portal, available: <http://www.melt-project.eu>

⁶ del.icio.us, available at <http://del.icio.us>

From del.icio.us, using the html service, we were able to download these users' 100 last posts including the tags. We also recorded the total number of their posts, all the tags applied and usernames within their network. Table 1 presents the data sets; we use the term *distinct* for a tag or a resource that has been recorded in the system, as opposed to *applied*, which means how many times the tag has been associated with a post or how many times the same resource appears in collections.

Table 1: The data sets including both del.icio.us and MELT data.

	Number of users	Number of posts downloaded	Number of distinct resources	Number of distinct tags	Number of tags applied	Number of posts in the system by this group
del.icio.us	16	1176	1081	944	1583	3222
MELT	16	245	107	301	663	245

2.2 Results

Although our data sets are not directly comparable (most users have been using del.icio.us more or less for a year, whereas the portal only for 3 months), we can already see that the amount of posts in del.icio.us is substantial (3222). The median amount of posts was 105.5; 59% of subjects were above that, which indicates that most of them were dedicated del.icio.us users.

We manually analysed 50 most used distinct tags that appeared in their del.icio.us. We found that almost all of them were related to educational resources, such as teaching, English, grammar. This indicates that teachers are not using del.icio.us for personal usage, which was indicated both from the data and interviews, but are systematically collecting resources that they will use later for teaching.

3 Towards a more integrated service for teachers

We have two main aspirations for integrating teachers' del.icio.us collections in the portal. First of all, we want to make the portal a more central part of teachers' every day experience. We anticipate that if resources found via the portal and ones that they have collected from elsewhere are made available in one place, this will improve the quality of their 'digital life'. Second, currently the portal only offers resources from "trusted sources" of national educational authorities. There is no way for teachers to upload their favourite resources to the portal to share them with others (which they have requested). This deficiency could be addressed by making available both the tags and the content from teachers' del.icio.us profiles. It would also augment the number of resources that other teachers could discover.

Figure 1 displays an APML profile from del.icio.us generated by Tastebroker.org⁷. We can create a representational profile from a teacher's implicit taste based on their tags, and the explicit taste using the links that they have posted.

```
- <APML version="0.6">
- <Head>
  <Title>Del.icio.us data taste for vuorikari</Title>
  <Generator>Created by TasteBroker.org </Generator>
  <DateCreated>2008-07-11T12:22:36</DateCreated>
</Head>
- <Body defaultprofile="web">
  - <Profile name="web">
    - <ImplicitData>
      - <Concepts>
        <Concept key="ict%2C" value="0.031746034" from="tastebroker.org" updated="2008-07-11T12:22:36"/>
        <Concept key="melt" value="0.53968257" from="tastebroker.org" updated="2008-07-11T12:22:36"/>
        <Concept key="melt_pilot" value="0.14285715" from="tastebroker.org" updated="2008-07-11T12:22:36"/>
      </Concepts>
    </ImplicitData>
  </Profile>
</Body>
</APML>
```

Figure 1: An example of implicit taste (tags) based on an APML profile.

Experiment with APML has a number of reasons. Firstly, as we generate CAM based logs on teachers' attention on the portal, it will be in our interest to create a more holistic profile combining both del.icio.us and MELT tastes in the same APML profile. Secondly, as these profiles are portable across a number of platforms, teachers will also have a possibility to export their profile elsewhere, or import their profile from another educational service to our portal.

4 Future work

Suggestion of the future work in this area involves implementation and further development, as well as user studies on the acceptance of the idea of portability across repositories and services.

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⁷ Tastebrokers.org, available at: <http://tastebroker.org/>