Participatory Classification of Educational Resources

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Abstract: A participatory classification scheme centered on student activities is proposed to classify educational resources according “models of use”. Educators and authors may propose a multitude of models of use characterizing different pedagogical approaches for using the same resource. The scheme proposed turn explicit the tight relation among infrastructure conditions, social dynamic and student activities in each model of use of a resource. The visualization or creation of distinct models of use has a formative impact on users and contributes to the creation of a critical community, helping also to identify the necessity of new resources. The scheme proposed creates a bridge between formal accepted schemes like LOM and informal social tagging. The scheme was successfully tested with resources from three national portals from RELPE – Latin American Network of Educational Portals. Some ideas for the implementation of a large scale classification of resources from all portals of RELPE are presented.

Keywords: Classification scheme, social tagging, metadata, educational resources, repositories.

1. Context and Motivation

In the realm of educational portals and repositories catalogation has still to achieve a more useful role. Internationally accepted schemes like LOM and Dublin Core

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have too many fields that are either not filled or not used during searches. Like other countries or regions, Latin America has create a joint project congregating several educational portals, at the nation level. More than 18 countries of the region participate and a common classification scheme extracted from Dublin Core was adopted many years ago.

Using the classification adopted so far in RELPE it is possible to map resources according to subject, type, rights and language common to Dublin Core and one extra field called educational type, similar to the learning resource type from LOM that characterizes the resource with respect to its educational format, e.g. activity, webquest, conference, teacher’s guide.

The intention with the classification scheme proposed in this paper is to establish a tight relation of the resource with possible practical uses of it. So far it is hard to identify the intention of the author of a resource or to benefit from good experiences handled by other educators while using the resource in their classrooms.

The idea that other educators besides the authors also classify the resource, or in other words, create models of use, derives from the social movements and user participation successfully demonstrated in the so called Web 2.0. Social bookmarks and social tags like those introduced in e.g. delicious or flickr are good examples of the benefits one has in inserting own tags or bookmarks and searching in the big community. Also, if suitable and fun tools are used for the classification of educational models of use of a resource, one may surpass eventual resistances. The example of the Fold It project, www.fold.it, is illustrative: users combine structures in a fun, game like, way to build compact proteins. The participation is voluntary and so far very successful.

It is important to emphasize that the new metadata we propose, collectively called a “model of use”, characterize and describe in a meaningful way the educational use of the resource instead of the resource itself. Although the model of use for a resource may be considered a classification of the resource, it could also be considered an addendum to it, an enrichment, added either by the author or by other educators.

A similar movement of focusing in educational activities instead of resources has been defended by the community of EML (Educational Modeling Language) (Koper, 2001, Koper et al. 2004) and Learning Design (Hummel et al., 2005). There is however a difference in the granularity in what is proposed here. According to EML the description of a learning activity that uses educational resources includes the pedagogical theory, the educational strategy, the combination of resources and roles, the necessary infrastructure … Although it is very rich, the creation of such designs is usually an overload for a common educator. The association of a multitude of models of use directly to the resource as proposed in this paper has the main advantages in its simplicity and in the possibility to add the models directly to resources from existing repositories and portals.
While studying catalogation schemes, portals, repositories and learning design creation tools special inspiration was obtained by us from DialogPlus (www.dialogplus.soton.ac.uk) (Davis et. al, 2007), from Laurillard’s work (Laurillard, 2001) and from the pedagogical vocabulary defined at JISC (Currier et. al, 2005). We decided to focus our proposal of classification on the use of the resource. For that we adopted the list of verbs that describe “user tasks” in DialogPLUS with some minor modifications as explained below.

3. Metadata for the Classification of Models of Use of Educational Resources

The main reason for us to propose a new classification scheme is to enhance and stimulate the use of digital educational resources. In this sense we intend to give educators a feeling of student tasks while using the resource in a very intuitive and visual way by just looking at a graphical interface that condenses information on student tasks in a given context characterizing a model of use. Student tasks are represented through verbs in infinitive extracted from a pre-defined list (read, compare, create …).

One resource may have several models of use: different pedagogical approaches, different infrastructure conditions (one computer per student, projector, one computer for the teacher, etc.) and different social dynamics (individual work, small groups, pair, etc.) would allow for different models of use. Such diversity is rich and may fulfill needs and conditions in a variety of regions.

The idea is that the model of use is characterized by metadata that are “aggregated” to the resource through its URI and, in the case of RELPE, may be implemented in a modular, distributed and federated way.

Following are the metadata of the classification scheme that characterizes a model of use and it articulation and filling rules.

**Model of Use Identification Data**
- URI of identification of the model of use
- URI of the associated resource
- Registration data of the model of use
- Author / Responsible for the model of use
- Language of the model of use

**Model Description Data**
- Total time for the experience of use
  - unnormalized declaration of the total time expected for the use of the resource according to students tasks.
- Optimal social context
  - social dynamic predicted for the use of the educational resource. This field allows the registration of just one social context per model (e.g. if the activity is to be realized
individually it is not possible to register it to be made also in pairs). If the activity can be realized with another dynamic and social interactions a new model of use should be generated to describe it.

- Minimal technological infrastructure
  - Minimal technological environment for the realization of the activity that uses the educational resource. The selection of more than one condition implies the concurrent necessity of all of them (e.g. one computer for the teacher and a multimedia projector; other example: one computer per student and wireless connection). If it is possible to realize the activity using another technological configuration an additional model of use should be generated to accommodate it.
- Competencies / skills / habits
  - competencies, skills and/or habits (CSH) that should be developed or used during the experience of use of the educational resource. Verbs (in infinitive) are used to describe student actions that depend or develop CSH. There is no worry in the model to establish a relation among which verbs relate to which CSH. Only verbs representing concrete action are used, i.e., verbs that generate “visible” actions (e.g. apply, compare, create, criticize, etc.). The model contains the proportional time dedicated to each action in relation to the total time of the experience.
- Observations
  - free and not normalized optional text that brings relevant details or aspects related to the model of use. 3.1 Test of Concept

The conceptual test of the model was made by inviting two specialists in the field to, independently, classify 60 resources randomly chosen and provided by portals from RELPE. A simple web tool for storage and management of models of use was developed and implemented for the pilot classification.

From the pilot and the specialists’ reports some adjustments were made in the classification scheme. Following are the main results from the pilot probe:

- The models of use elaborated by the specialists for the same resources differ among each other representing distinct educational conceptions and didactic experiences from the specialists.
- It is necessary and critical to dispose of a graphical interface for filling the registers that express the cohesive and organic character of the

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three dimensions of model of use (social context, infrastructure, and competencies). The same interface must be dynamic, useful and motivating for users to understand existing models of use and to participate filling new models of use.

- A suitable implementation architecture is needed to contemplate the differences in a federation of portals like RELPE: different scales, levels of structure and technological specifications. Similar to a study conducted by Hunter (Hunter et al, 2008), it is possible to evaluate at least three possibilities: local management of models of use; local management of the models of use with a central repository periodically updated; centralized management of models of use with synchronic web services to the portals.

- It was possible to assure the viability of the proposed scheme and its capability of describing educational resources in a meaningful way. The probes showed the possibility of establishing reflections about the educational practice through the several models of use and through the relations among competencies, social context and infrastructure.

4. Conclusion

The classification scheme based on models of use of educational resources proved to be powerful and useful in classifying and inducing reflections on the use of educational resources. The potential participation of users as classifiers extend the reach of the model benefiting from the collective intelligence and enriching the use of educational resources by creating new and explicit models of use for distinct realities and educational conceptions.

Analyzing models of use it is possible to infer pedagogical conceptions of community of authors or geographically related people. It is also possible to follow the evolution of models of use for resources that are time constrained (e.g. news that become old fashioned).

The participation of teachers in the process of creating models of use for existing resources is a formative experience that leads to a metacognitive process of thinking about the educational practices and their didactic models. Such metacognitive processes, in a lower level, happen even just by searching and visualizing models of use created by different teachers.

The next steps are the definition of an implementation architecture and the creation of a suitable interface for a classification tool. The implementation and use of the tool should happen after discussion and validation among RELPE Portals and international players in this field.
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