Creating a map for OER initiatives in Latin America

Tel Amiel[a] Tiago Soares[b] Xavier Ochoa[c]

[a]*Universidade de Campinas, UNICAMP, Campinas, Brazil*
[b]*MIRA Project Research, São Paulo, Brazil*
[c]*Escuela Superior Politécnica del Litoral, ESPOL, Guayaquil, Equador*

Abstract. In this article we discuss the creation of a federated mapping system focused on OER for basic education in Latin America. We present the rationale and implications of the project, software development, and focus on detailing the creation of a metadata scheme used to categorize OER-related initiatives.

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INTRODUCTION

The MIRA project[1] is the result of a Hewlett Foundation grant aimed at the creation of a prototype for a global map for Open Educational Resources (OER). This call was prompted by a virtual discussion held at the end of 2012 to help define the necessity and model for such an undertaking. In this initial phase (1st of 2 phases), three groups were selected to create a functional prototype between the months of February and April 2014. MIRA is one of these projects.

MIRA has as its objective not only software development, but most importantly content gathering. We aimed to identify and map OER-related initiatives in an area that is not well known, because of the languages (Portuguese and Spanish), geographical region (Latin America), and the level of education chosen for this survey (K-12, or basic education). For this project, because of the time constraints, we focused on 24 countries: Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Uruguay, Venezuela. Approximately 60 initiatives with complete metadata were mapped.

REVIEW

The movement towards "open" in education has taken many forms as groups of people and institutions have aimed to provide greater access and conditions for people to learn (Peters & Deimann, 2012). Open resources, or OER, inspired the recent renewed interest in openness in education, particularly from within higher education. The main thrust of the OER movement has been, up to date, focused on higher education and in/non-formal opportunities for life-long learning such as the pioneering OCWC, the many MOOC-inspired initiates, up to the more recent OERu[2]. Apart from a small number of relatively well-known initiatives (Siyavula[3], Wikiwijs[4], RIVED, Merlot[5], Curriki[6]), K-12 projects have very little exposure and are much more focused on local demands and challenges. Making these initiatives visible and promoting the exchange of information and resources between them remains a palpable challenge for the OER movement.

This is partially due to the inherent challenges of basic education. Human and physical resources and the autonomy to employ them in order to foster OER in K-12 is minute in comparison to the tertiary level. Resource exchange is substantially more difficult at the basic level of education as curriculum standards and teaching methods directly impact the types, quantity and quality of resources to be developed in different nations and regions.

[1] http://www.mira.org.br/
[2] http://oeru.org/
[3] http://www.siyavula.com/
[4] http://www.wikiwijsleermiddelenplein.nl/
[5] http://www.merlot.org/
[6] http://www.curriki.org/

Moreover, the capillarity and universal quality of basic education provides substantially more difficult conditions for access, use, distribution and reuse of open educational resources.

Importantly, many have argued that non-English resources have limited visibility in comparison to resources in English within the OER movement (see Amiel, 2013, Ochoa, 2011). The current project therefore aims to provide visibility to Portuguese and Spanish resources at the basic-education level. Moreover, by bringing partners from within Latin America together the project hopes to promote cross-country and regional cooperation in the exchange of ideas and resources, particularly between Brazil (the sole Portuguese- speaking country in Latin America) and Spanish-speaking countries in the region.

DATA GATHERING

We compiled a list of contacts, people with knowledge of open access, open educational resources and basic education in Latin America from whom we could ask help in identifying relevant initiatives in each of the countries. We ask each person, via email, to fill out an online form specifying the (5) most important OER-related initiatives in their country and in other Latin American countries, and a suggestion of another person we could get in touch with. From our list of 70 contacts, 23 replied, from nine countries (Venezuela, Peru, Chile, Colombia, Brazil, Argentina, México, Ecuador, Uruguay). In parallel, we identified initiatives through web searches, repository listings and published documents, including WSIS and UNESCO, RELPE, OER-Brazil, OEA, and others.

A first review of resulted in 80 initiatives. We filtered those initiatives not aligned with the project scope, leaving behind projects focused on higher education, thesis and dissertation repositories, those that were merely informative, among others. Our exclusionary criteria was based on partially on the definition by UNESCO/COL (2011):

> OER are teaching, learning and research materials in any medium that reside in the public domain and have been released under an open licence that permits access, use, repurposing, reuse and redistribution by others with no or limited restrictions (Atkins, Brown & Hammond, 2007). The use of open technical standards improves access and reuse potential. OER can include full courses/programmes, course materials, modules, student guides, teaching notes, textbooks, research articles, videos, assessment tools and instruments, interactive materials such as simulations and role plays, databases, software, apps (including mobile apps) and any other educationally useful materials. The term 'OER' is not synonymous with online learning, eLearning or mobile learning. Many OER — while shareable in a digital format — are also printable.

In light of earlier studies conducted in Brazil (Amiel & Santos, 2013), we knew that even the best repositories and initiatives present difficulty in showing, with clarity, which licenses are being used, and aligning the licenses presented for the site with those of the resources. We ignored the use of open formats and standard protocols as criteria, since this is an area of reduced priority and awareness, not only in Latin America, but also around the world. Because of the considerations, we had a porous filter: we aimed to include rather than exclude. We added to our list any site that had an open license or contained resources with open licenses, and had a connection to K-12 education.

One way to reduce ambiguity was to keep initiatives where there was a clear and explicit orientation in regards to remix and reuse. We also maintained projects that while declaring full Copyright, institutionally were positioned as being open and providing free access. With this, we hoped to demonstrate the ambiguity that we had witnessed in previous studies in regards to public financing and openness of resources, and the definitions of what constitutes "open" and "free".

An analysis of the projects demonstrated heterogeneous implementations, starting the software system (static site in HTML, CMS, or structured repositories), the use of licenses (disparity between site licenses and resource licenses, lack of clarity in terms of use, in general, among others), as well as differences in how data was categorizes/metadata used to organize the resources. We found few initiatives making use of structured repositories (such as DSpace).

METADATA

Though many metadata schemes exist for learning objects and open educational resources (such as the emerging LRMI[7]), there is less consensus as to the data needed to categorize initiatives, people and projects related to OER. In order to create a categorization system, we analyzed five existing OER projects, which were part of the virtual discussion in 2012 and the Hewlett call, in order to understand the systems and functionalities in these initiatives, but with a particular interest in their categorization schemes and which type of data they collect. The results of this detailed analysis is available openly. The analysis of these projects helped us identify varied methods for initiative categorization. Beginning with these data, we created categories and a vocabulary in order to start a collaborative project to define the metadata scheme for our project. We acted in partnership with the eMundus (http://wikieducator.org/Emundus) and POERUP (http://poerup.org) projects, which are also aiming to map their initiatives. The final scheme is made up of 11 core, and 14 extended categories and a controlled vocabulary (Table 1). We aligned each of the field with Dublin Core in order to guarantee further interoperability.

TABLE 1. Initiative metadata scheme and Dublin Core equivalence

Type	Categories	Dublin Core
Mandatory	Name/Nome/Nombre	Title
Mandatory	URL	Identifier
Mandatory	Type/Tipo/Tipo	Type
Mandatory	Organization/Organização/Organización	Creator/Publisher
Mandatory	Country/País/País	Coverage
Mandatory	Place/Lugar/Lugar	Coverage
Mandatory	Address/Endereço/Direccíon	Coverage
Mandatory	City/Cidade/Ciudad	Coverage
Mandatory	Interface language(s)/Idiomas de interface/Idiomas deinterfaz	Language
Mandatory	Resource languages/Idiomas dos recursos/Idiomas delos recursos	Language
Mandatory	Site licence/Licença do site/Licencia del sitio	Rights
Extended	Collaborator(s)/Colaborador(es)/Colaborador(es)	Contributor
Extended	Collections (from IMS LODE)	
Extended	Contact/Contato/Contacto	
Extended	Site accessibility	
Extended	Resource licences/Licença dos recursos/Licencia de losrecursos	Rights
Extended	Types of resources/Tipos de recursos/Tipos de recursos	Format
Extended	Educacional level/Nível educacional/Nivél educacional	
Extended	Areas/Áreas/Áreas	
Extended	Funder(s)/Financiador(es)/Financiador(es)	Contributor
Extended	End, Início|Fim, Início|Fin	Date
Extended	Data output,Saída de dados,Salida de datos	
Extended	Input by user,Contribuição de usuários,Contribuicíon de los usuários	
Extended	Description,Descrição,Descripcíon	Description
Extended	Tags,Tags,Tags	Subject
System	Automatic/system data	
System	Creator ID	
System	Creator timestamp	
System	Entry ID	

[7] http://www.lrmi.net

We used standards such as ISCED in order to categorize schooling levels, as well as IMS LODE categories in thinking about the expansion of the project. We hope the metadata scheme developed here can be used as a reference for future initiatives aimed at categorizing and mapping OER-related initiatives to facilitate data exchange.

We built also built a detailed analysis of existing software systems and frameworks that we considered for this initiative, and already thinking about the second phase of the project. We based this detailed analysis based on customization of the JISC/RSP project for the analysis of repository software. The complete table and a critical analysis of these systems is available openly and can help others in defining platforms for mapping initiatives based on dozens of criteria[8].

FEDERATION

From the start, we decided the mapping system should be open and distributed, so any initiative could consume the data produced by MIRA or replicate the software in their installations. All instances of the software should be able to share and synchronize their contents with any other installation. This configuration creates a reliable network of information repositories, without a central node or single point of failure. All mapping information is stored in a CouchDb database, which provides out-of-the-box the necessary capabilities, enabling peer-to-peer synchronization and native support of JSON formats. Data from this database can be extracted programmatically and used to generate customized search or visualization applications.

FUTURE DEVELOPMENTS

A call for the second phase of the project was launched by the Hewlett Foundation, with a deadline for proposals set for August 15th. We are currently working with partners to define collaboration opportunities in order to expand and enhance the mapping system. Though we consider MIRA a final and usable system, we are fully aware that it was developed as a prototype within a very short time frame, and as such, has limitations. Many changes could be made to the system in order to improve usability and visualization.

Still, the prototype and an initial analysis of the data point to a higher than expected number of initiative that have open resources for basic education in Latin America. The project currently holds approximately 60 initiatives with detailed data, and new data are and will be added regularly. The data collected during this first phase can serve as a diagnostics, giving us an opportunity reflect on further development. As such, for phase two we envision to:

1. Expand the scope of the initiatives in the Americas and beyond;
2. Improve on the existing layout through user testing;
3. Expand on the decentralization scheme, facilitating the exchange and synchronization of data amongst simple and complex repositories;
4. Make it easier to include data and simplify the moderating procedures;
5. Develop an application and software interface that will allow us to go beyond initiatives (mezzo level) to the resources themselves (micro), as long as these initiatives have some sort of data output mechanism (OAI-PMH, SQI, API, XML or JSON dumps, etc.)
6. Improve on the use of linked data, using URIs (schema.org, FOAF), and others;
7. Disconnect the system from its WordPress-dependency, used here for the prototype. We will aim to develop a similar interface, but without the dependency on an SQL database, creating a lighter CMS-independent system (Worpdress/Joomla/Drupal).
8. Find ways to dynamically organize and present content and allow interaction with users, including information about OER, and other possibilities, which might extend know-how in regards to OER.

References

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