Open online courses in Colombia: Report of an educational and technological experiment

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Abstract

Based on a discussion of the background, features and limitations of open online courses, this paper describes a technological solution to support their offering, built on online tools that don't require self-managed hosting. This is a proof of concept that intends to highlight the possibilities and obstacles related to this kind of educational practice in a Latin American context.

Keywords

open education, open online courses, open teaching, open educational resources

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1. Introduction

In September 2009, building on the experiences developed by David Wiley, Alec Couros, Stephen Downes and George Siemens (as described by Fini et al. (2008), Fini (2009), Wiley and Hilton (2009) and Couros (2010)), the first open online course offered in Spanish was launched in Colombia. This course (called *e-Learning* -ELRN-) was part of the master's program in Educational Informatics at Universidad de la Sabana (Bogotá), and included for-credit participants who were formally enrolled, as well as people participating in open modality (who don't pay for the course and don't receive a certificate when it ends). Three new courses have been offered so far, based on the ideas and technology used in the first experience: one by EAFIT University (Medellín) called *Groups, Networks and Communities* (GRYC), a new offering of ELRN at Universidad de la Sabana in the first semester of 2010, and a new course called *Teaching in learning environments supported by Information and Communication Technologies* (DocTIC), offered by Universidad Pontificia Bolivariana (Medellín) between July and September 2010.

The solution proposed takes into account that email is the most widely used online communication tool in Colombia and technologies such as RSS are still unknown to most people. Also, given that not all teachers have access to learning management system (LMS) platforms, the tools used have been chosen because of their wide availability and easiness of reuse.

2. Background

Open online courses are a recent practice, which builds upon the work developed in the Open Educational Resources (OER) area. OER initiatives are usually concerned with content production, publication and storage, and only in recent years other experiences going beyond the mere provision of educational materials have emerged, proposing openness in different academic and educational services. Wiley and Hilton (2009) describe several ways in which this notion of *openness* reflects in some higher education institutions, and refer to an emerging practice which they call *open teaching,* in which:

> "…faculty publish their course materials online under an open license before the beginning of the course and invite others from outside their university to participate in the course together with the "official students" of the course. In many cases, all students (both tuition-paying and informal students) post their work to publicly accessible blogs for critique and discussion by the larger group."

Examples of this practice, though recent, have created new areas of interest that are just starting to be explored. In September 2008, Stephen Downes and George Siemens offered for the first time a massive open online course (MOOC), which addressed in its design some specific aspects of what it means to offer open learning experiences at a large scale. The course Connectivism and Connective Knowledge (CCK) showed the importance of having mechanisms to identify, aggregate and redistribute the work developed by participants in such a course.

The technology used in many open courses has been analyzed by Fini et al. (2008), Fini (2009) and Mak et al. (2010). Couros (2010) provides a rationale for the technology used, which consists of:

- **Syllabus / Activities:** Published on self-hosted or public wiki platforms.

- **Individual reflection:** Participants publish their contributions in blogs hosted on public services.

- **Asynchronous Communication:** Centralized communication happens on mailing lists (on services as Google Groups) or discussion forums (on Moodle installations).

- **Synchronous communication:** Participants meet regularly on lecture/follow-up sessions through Web conferencing platforms such as WiZiQ or Elluminate.

- **Resource bookmarking:** Participants tag relevant resources on social bookmarking services such as Delicious or Diigo.

Centralized asynchronous communication has been very relevant in the first open courses offered in North America, because there were no tools allowing easy access to the distributed content (posts and comments) created by participants. In some cases, instructors use OPML files to simplify the process of aggregating blogs, but this solution requires participants to be familiar with the use of RSS aggregators (such as Google Reader) and to include the continuous reading of such sources as part of their information consumption habits.

In order to offer an alternative to this situation, the 2008 version of CCK made use of a content aggregation and redistribution platform which collected the posts generated in the course blogs, and offered the possibility to subscribe to a daily e-mail message summarizing the activity happening along the course. This platform (gRSShopper, developed by Stephen Downes), is an open source application written in Perl that, once installed on a web server, allows for the aggregation, organization and distribution of information coming from RSS feeds and other sources. Distribution is made through e-mail daily messages, which may also include comments and suggestions by the course facilitators.

Recent courses have explored other technological solutions. *Futures of Education,* offered between April and June 2010 by Dave Cormier and George Siemens, used a self-hosted installation of the Drupal Content Management System (CMS), which enabled internal blogs and forums, but did not include a daily, automatically generated e-mail. On the other hand, Stephen Downes and Rita Kop's *Critical Literacies*, offered between May and June 2010, used Moodle as the platform to publish central activities and discussions, and gRSShopper to aggregate and redistribute blog entries via e-mail (in the same way it was done in 2008 and 2009 editions of CCK).

In Latin America, until September 2009 there are no documented experiences of this kind. Although there are some experiences using blogs in higher education, these are often developed within a LMS, and do not address the problem of aggregation and automatic redistribution of information coming from the wide network. Even though some of them make use of materials that

could be classified as Open Educational Resources, they are not examples of open teaching, on the terms described by Wiley and Hilton (2009).

3. Problem definition

The starting point of this work is the issue of designing and delivering a local open course in Spanish, building on the work developed by Wiley, Couros, Downes and Siemens, and taking into account local restrictions as well as some practical limitations of those experiences.

For instance, given that content is completely distributed, in some of these courses it is difficult (both for teachers and participants) to monitor conversations taking place in blogs. In some courses, although the technology used for aggregation and redistribution of information is available to anyone, it requires to have a server on which to install it, involving a high level of technical skill. This limits the use of such technology by teachers who might be interested in emulating such practices.

In consequence, the question to be solved is: Is it possible to 'replicate' a platform for information aggregation and redistribution (such as gRSShopper) using public tools (i.e. that don't require self-hosting), which can be freely used and even replicated later?

4. Design intentions

The technological design intended to provide an answer to the limitations identified above. It seeks to make reuse and replication possible by any participant in a given course. This means avoiding for-pay tools and solutions that require self-hosting. It also aims to facilitate access to content via e-mail, while providing options for more experienced users. Finally, following the ideas of *openness* expressed by Wiley and Hilton (2009), the tools used should not only facilitate access, but make possible the public collection and redistribution of information. For this reason, applications such as Moodle or social networking platforms like Facebook were discarded.

The experience proposed necessarily took into account that, outside of formal educational settings and certain corporate spaces, the use of a LMS is rather limited, and sometimes non-existent. The information environment that current students are facing and will face, is increasingly unstructured and distributed, so it makes sense to try and go beyond the organized environment simulated by a LMS, and create an experience that allows participants to work first-hand in such an information environment, thus developing skills to perform effectively on it. Following the CCK experience, there was also an intention to test some of the ideas proposed by connectivism and, in some cases, to allow participants to enhance their personal learning environment throughout the course. The detailed explanation of the decisions concerning learning design, however, is part of another paper.

5. Proposed solution

The solution implemented is illustrated in Figure 1. Each participant created at the beginning of the course a personal blog in any of the public services available for this purpose (such as Blogger or Wordpress). In some cases, participants used existing blogs. These were the main sources of information and, once created, had to be registered in a Google Docs form, which was embedded in the course wiki (published in PBworks).

The form was linked to Yahoo Pipes using the CSV export utility of Google Docs (using ideas outlined by Hirst (2008)). Incoming information was then processed by Yahoo Pipes, compiling the registered feeds into a single feed, which included posts produced by all participants. Finally, this feed was sent to Google Feedburner, where the possibility of e-mail subscriptions was enabled. This allowed participants to subscribe to course content through RSS only if they wanted to, because they had a choice of receiving a daily e-mail message with a compilation of the posts published during the previous day. Comments made on all blogs were also collected into a single feed, which allowed the same subscription alternatives mentioned above.

The process was transparent to participants, who only needed to have a blog to publish the content they created for the course, and to subscribe to the daily post and comment digests to monitor the work of the whole group. Additionally, participants used a Diigo group (a social bookmarking platform) to compile resources related to the subjects of the different courses.

This solution did not limit what advanced users could do, because blogs include, by means of embed code, content published on several other services (such as Slideshare, YouTube or Flickr, for example). In addition, the feeds generated were connected via Twitterfeed to a Twitter account created for each course, allowing for "real time" updates of information coming from the feeds, and notifications of resources collected in the Diigo group. This enabled participants with different information consumption habits to receive information according to their personal preferences.

To summarize, following the example of Wiley, Couros, Downes and Siemens' courses, a wiki was used as a platform to publish the weekly activities of the course. Blogs were the main tool for student reflection, as well as the place where asynchronous, decentralized discussions were held. Resources were compiled in Diigo, and weekly synchronous sessions were held in platforms such as WiZiQ or Elluminate. The problem of aggregation and redistribution was solved using a mash-up of Google Docs, Yahoo Pipes and Google Feedburner.

As illustrated in Figure 2, the core of this approach relies on Yahoo pipes. Several pipes have been built and parameterized, which means that reuse becomes an easier process, although it is clearly not a trivial one.

The main pipe (getPosts) aggregates blog entries as described above, and uses several parameters to generate its output:

- The list of 'course' feeds (CSV format, coming from Google Docs)
- The feed of a course blog (optional, which may or may not be used by the facilitator to broadcast timely information)
- Start and end dates, which delimit the beginning and the end of a given 'course'
- A maximum number of items generated, used to solve a limitation of Google Feedburner, which does not allow input feeds with a size greater than 512Kb.

It is possible to adjust these parameters in order to get custom output from different sources and specific time periods.

At the end of the first course offered, the importance of having a mechanism to track blog comments made by participants was evident. To solve this, a new *pipe* (getComments) was built, using as input the compiled RSS feed of blog posts (generated by the first *pipe*). This *pipe* processes each post and automatically identifies and obtains the corresponding comment feed (when available), thereby generating a single feed that compiles all the comments made in all posts. As in the previous case, this pipe includes start and end dates and a maximum number of items to be generated. In addition, the *pipe* collects specific Twitter *hashtags,* as well as optional RSS feeds from any other services (e.g., Google Groups, or Moodle forums). The product of this second pipe is also sent to Google Feedburner, enabling subscription via e-mail.

The third *pipe* in the sequence (getGraph), takes as input the RSS feed for comments and information from the Google Docs form, and generates a new feed that specifies who commented whom. This information serves as a starting point for building graphs that represent the emerging conversation among the participants of the course, constituting an important monitoring tool for both instructors and students. The detail of this approach is part of another paper.

6. Results

The solution described was first used in September 2009, and has been tested with four different groups. Table 1 shows the summary of participation in the courses offered. It is worth noting that even though participants subscribe to information from a course, this does not mean they do participate actively on it.

Table 2 shows the summary of subscriptions to the feeds used in the different courses. The first column shows the average number of subscribers throughout the existence of the subscription, while the maximum number refers to the peak of subscriptions reached during the time the subscription was available. Note also that the two offers of ELRN are not being differentiated, as participants could activate or cancel their subscription at any time. That's why the last column refers to the email subscribers active at the time of writing of this document.

It is clear that the most important results are not related to the use of the technology but instead to the learning outcomes of the experience. Detailed information about these issues is being collected at the time, so there are no formal results to report yet. However, an informal review of participants' blogs suggests that the course design actually helps them to see a clear alternative to the kind of activities promoted in a LMS, demonstrating the possibilities of blogs as tools for reflective thinking.

7. Discussion

Many users make mistakes in the URLs they provide when registering, and some others use previous blogs, which can include information unrelated to the course. In order to fix these errors, a manual review of the registered feeds has been done in every course. The errors found suggest a limited skill level of many people interested in the courses, and leaves open questions about whether or not is it possible to automate this review process.

Although the use of various media types articulated through blogs is allowed, it is worth mentioning that the predominant communication medium is still text. This is neither good nor bad in itself, but it makes possible to quickly address issues such as inclusion, for example. A course that can be followed through email facilitates access to blind people and several other disabilities, and opens a possibility of interaction for communities that still have limited Internet access (via mobile devices, for example).

Unfortunately, Feedburner e-mail subscriptions are not flexible enough, so participants cannot decide how often to receive notifications (default is daily). It is difficult to get an output such as the one generated using gRSShopper, where facilitators could comment on specific content before they reached participants. To that extent, customization is being sacrificed for ease of replication.

Possibly the most important issue with this solution is at the same time one of its strengths: it depends completely on third party, online services. Any future changes to the Yahoo Pipes engine, or any policy changes in any of the tools used could bring a disruption (or even a full stop) of the aggregation services.

This makes clear the convenience of LMS, platforms that greatly simplify the work of recording, organizing and managing course information. The proposed solution serves as a demonstration of how technology can be articulated to simplify tracking in a distributed and unstructured information environment. Yet, it is clear that its current state still presents obstacles to teachers willing to explore the practice of open teaching, raising questions about the potential growth of these experiences.

That said, there is an opportunity to develop new platforms that enable easy information aggregation and redistribution, making reuse easier at the same time. The approach described in this paper, as well as conceptual designs such as EduFeedr (Põldoja, 2009) and gRSShopper, are a starting point in this exploration. Together with an analytics layer, such platforms could even become a reasonable alternative to a LMS for some teachers.

Finally, it is important to say that the number of tools used seemed to be too large for some participants. This is interesting, considering the array of other tools not proposed as mandatory (such as social networking platforms, microblogging, etc.) It is quite possible that this perception is based on the habit of having a LMS that provides a single access point to everything that has to be done in a course. However, this raises again one of the arguments mentioned above: whatever the area, it is very unlikely to find one single place where someone recommends what resources are to be read, or where someone assesses and gives ongoing feedback, as in a LMS. If a course (and thus, the educational institution) intends to reflect the current ecosystem of information and technology, it is not only desirable but also necessary to bring students into this kind of environment.

8. Prospective

Even though reuse of the *pipes* built depends on an improved documentation of the process, there are already people using this infrastructure for their own courses. A group of Argentinean students are offering an open course based on it, and some participants in ELRN and DocTIC have started to use it for experiments in their own classrooms as well. Their experiences will be very important to test the possibilities of this proposal.

The experience described opens some additional questions and possibilities. There are some interesting implications when thinking on a larger scale. For example, what would it mean for a model like this to be implemented at the level of a full academic program? What if all the content produced were to be aggregated in other platforms and redistributed in a personalized way? Could this be a decentralized alternative to a LMS, focused on another type of tracking and activities? These are just some of the questions that this experience opens for future study.
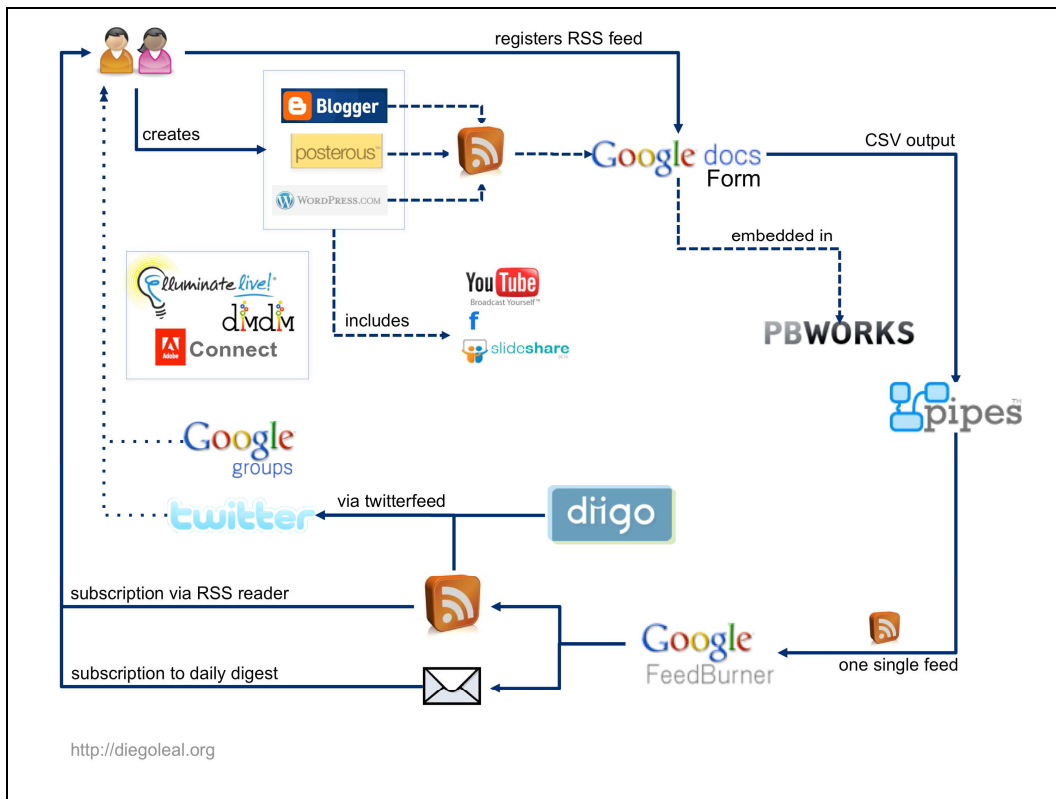
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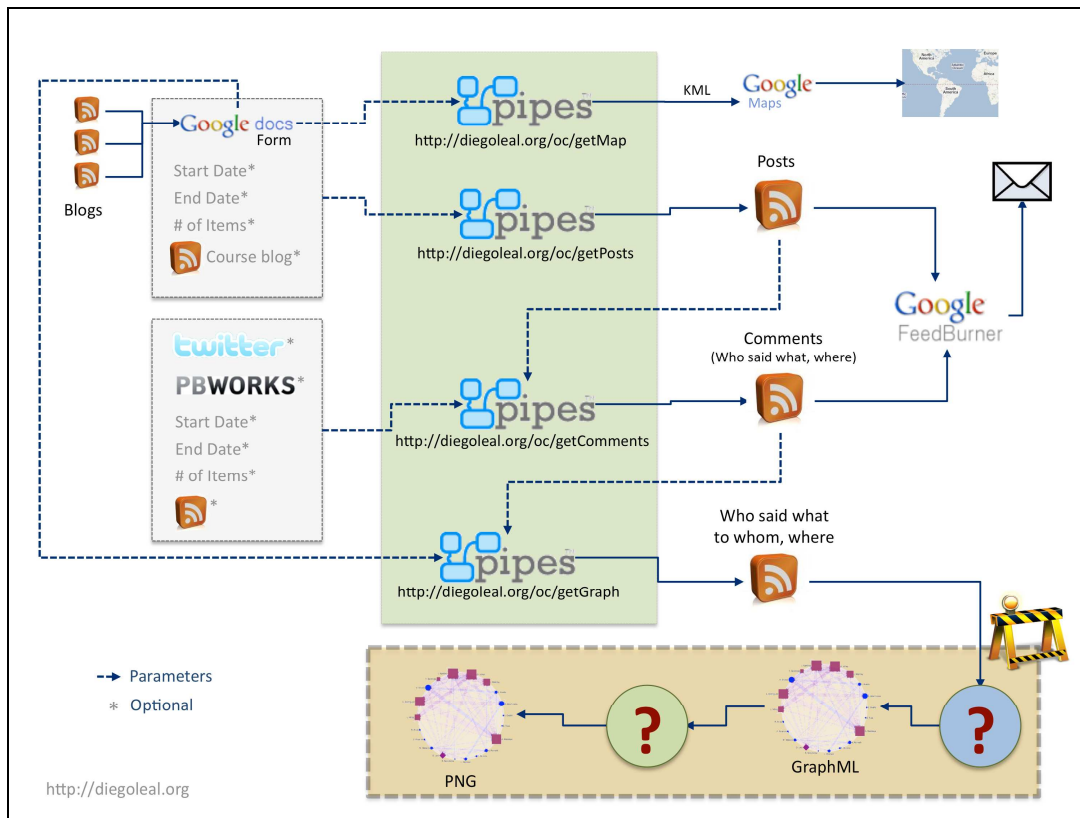

Figure 1. Technological solution implemented

Figure 2. Information flow in the proposed solution

Course	Enrolled			Completed the course / Active		
	For-credit	**Open**	**Total**	**For-credit**	**Open**	**Total**
ELRN09	13	31	44	12	4	16
GRYC10	7	34	41	7	3	10
ELRN10	14	29	43	10	4	14
DOCTIC10	25	93	118	25	4	29
Total	**59**	**187**	**246**	**54**	**15**	**69**

Table 1. Summary of participation in the courses offered

	Subscribers		
Feed	**Average**	**Max.**	**e-mail subs. (04/08/2010)**
ELRN-Posts	33	48	20
ELRN-Comments	7	17	3
GRYC-Posts	27	49	17
GRYC-Comments	8	18	7
DocTIC-Posts	35	96	23
DocTIC-Comments	24	76	14

Table 2: Subscription statistics (provided by Feedburner)

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