MOOC in Europe

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Evolution of MOOCs

Since the beginning of the calendar year, the noise around MOOCs has steadily grown, announcements by universities of new courses are exploding, major market players continue to highlight the agreements they have made with universities for recognition of their certifications, especially in the United States.

MOOC are a main subject in an increasing number of conferences, seminars and symposia; various academic associations (EUA LERU, ...) take or will take a position about this new method of teaching, its interests and disadvantages. EADTU (European Association of Distance Learning Universities) organized a solemn declaration of the European Community, April 23, OPenupEd [1] and provides a gateway to point to different academic MOOC. The first critical reviews are emerging in the United States, and some are beginning to denounce the myth of cheap quality education. The hopes raised by MOOCs follow the famous Gartner’s "hype curve", as any modern technology. The MOOC phenomenon already overpassed the peak and drop towards a more realistic vision. This seems to be confirmed in recent studies by Gartner [2] and other experts [3].

Nevertheless, the MOOC phenomenon is present. It changes not only the approaches to teaching but also the perception that the public may have from Higher Education institutions. This is politically important in in the context of the competition between Higher Education institutions for their international visibility.

The perception of the MOOC rapidly evolves. The number of publications increases and the reader may get an idea through reference [4]. This document is based on our participation in several conferences and conventions, and, in particular “The summit of MOOC stakeholders” held in Lausanne, EPFL, 6-7 June 2013. This restricted meeting, by invitation, was attended by the most advanced players in Europe with representatives of edX and Coursera. I had the honor of representing EUNIS (European University Information Systems Organization) and UPMC.
MOOC everywhere in Europe

MOOCs appear everywhere across Europe, most often in the greatest anarchy. Sometimes, due to their objectives and the small size of their audience, it is difficult to distinguish them from classical courses managed with conventional LMS. In some cases LMS have been chosen to create MOOCs.

In the Netherlands, for example, the existence of a structured organization such as SURF [5], which covers most of the areas of the digital education, did not stop the University of Amsterdam to launch its own MOOC using Sakai OAE. Leiden chose Coursera, Delft edX.

In Great Britain, where the Open University set up a national MOOC platform FutureLearn [6], Oxford, Cambridge, Imperial College and a few other world top-ranked universities do not participate. The University of Edinburgh, while being a member, opens courses in Coursera. Futurelearn is oriented towards UK and does not seem to be interested in the rest of Europe.

Spain has united under the name Miriada [7] and is building its own platform with the support of private companies (Bank Santander and Telefonica), oriented towards Spanish speaking South America. This does not prevent other initiatives such as UNED (Universidad Nacional de Educacion a Distancia) [8] with its own platform.

In Germany, as in other countries, actions occur in the greatest disorder: ten MOOCs about are open or under development, employing a wide variety of platforms, Coursera for TU Munich, Ludwig-Maximilians-U, Munich, for instance, or local solutions. Innsbruck and Graz in Austria are under way. Different governmental agencies have founded a consortium, Iversity [9]. When looking at their catalog, one may notice that courses and teachers are put in front but no information is given about the universities from where they come.

In Denmark 8 universities are preparing MOOCs, Copenhagen negotiates with Coursera. In Italy Sapienza joined Coursera …

In France some institutions have reached an agreement with Coursera, a course was set up with Sakai, under the cover of the Ministry of Higher Education; some active academic institutions open the MOOC with a variety of means, with or without a MOOC platform.

Except for UK, national initiatives do not seem to exist. Nobody yet seems to have a will to unite except in Poland, perhaps, around Poznan Supercomputing Center but the initiative is more like a database of online courses (OER) that a MOOC.

A wealth of technical solutions

Classical LMS (Moodle, Claroline, Sakai, …) are not used in massive MOOCs, except marginally Sakai. This arises from several limitations:

- Insufficient load sustainability for all functionalities. LMS (Learning Management Systems) were not build for tens of thousands of students present in the same course and some features simply cease to function.

- Poor or non existant social dimension as needed for MOOC. New features are needed to work and exchange among peers, to replace teachers evaluation by
peer evaluation and get progressive credentials (badges). Conventional LMS faithfully reproduce the classic roles (students, teaching assistants, teachers) and do not to manage peer-to-peer exchanges. This is their greatest miss. These limitations can be corrected and, in the future, modified LMS could remain good candidates for MOOC platforms. They may continue to be used for small MOOCs (less than 10 000 students) but, up to now, none is really present in this new market.

The main actors are:
- EdX [10], an American non-for-profit Foundation which has made its source code public
- Class2go from Stanford, which recently merged with edX
- Coursera [11], the most well-known organization together with edX, a for-profit organization
- Course Builder [12] from Google since this giant could not miss this new opportunity. The code is publicly available.
- OpenMOOC open code developed for UNED, already cited.

This list is not exhaustive, and new open or business initiatives appear every day. Across Europe, Germany, Spain, France and elsewhere new solutions are being announced: an entire field opens for training throughout life. Permanent education being a major business for the 21st century, MOOCs represent a new opportunity for platforms developers as well as for education business. What platforms will prevail is impossible to say today. Among private platforms, no doubt that the major sector players (Blackboard, Instructure, ...) want their share but new players like Google and other companies, leaders in the world of new technologies, are watching, ready to jump.

Among open source platforms, edX is taking the lead with Stanford merging with this solution and the choice of Open Source. Choices for the near future will include the ability of communities to organize themselves and to internationalize. Do not forget, however, that MOOC platforms are newcomers; their educational functionalities remain limited, compared to traditional teaching platforms (Moodle, Sakai, Claroline ...), and their ability to innovate quickly in this area will be a decisive factor. Their main pedagogical innovation, perhaps, is a thinking about putting intelligence in the automatic grading of students in tests and assignments but this is a very controversial subject belonging more to research than education [13]. However, we can expect rapid progresses in customizing educational courses to each individual, based on the analysis of student behavior [14]. This is one of the most interesting trends today about Learning Analytics [15].

The platform is seen as a temporary choice, not a final one until a "Darwinian process" selects the best platforms. All players are ready to change, depending on the opportunities and developments, also underestimating the cost of this transfer.

**Strategic choices, a European policy?**
MOOC deciders, participating in the "European MOOC Stakeholder Summit" [16], clearly expressed that they do not see any reason to rally a united organization either regional, national or European. Joining Coursera or edX, for example, is seen primarily as a means
to achieve an effective international visibility. At most they may have some interest in participating in common search portals such as OpenupEd [17].

European officials, belonging to the Directorate General for Education and Culture, are very careful and do not see the prospect of an European initiative to build a common European organization such as edX, even if the statement of 23 April 2013 [1] could give the impression of the contrary. Brussels is interested in MOOCs and organizes seminars and conferences but will rather work the classic way with project calls for MOOC courses build by groups of universities. The choice of the language might be a source of difficulties for such projects. They, all, recommend to act at national level, with regard to the platforms. At the time this document was written, only the British and Spanish, as mentioned above, had already moved in this direction.

But time is short. Should we merge in the U.S. consortia and risk, as some express it, to dissolve in a culture and a language that is not that of European nations? The choice is us to act individually or together to build an organization? The MOOC landscape is today, as well expressed by M. Cisel [18], a true Wild West!

**MOOCs, for what?**

The MOOC approach in Europe is very different from that of the United States. While they first see it as a change in the economic paradigm [18], European universities are more interested in changing their pedagogical approach to teaching, in order to make students more active. Teaching must be learners centered and MOOC courses may encourage students to work by themselves regularly, meeting their teachers regularly to review progresses and clarify some concepts. This is the basis of a new approach of learning, called flipped learning, where the learner is the main actor of his/her learning. At EPFL, in Lausanne, in the first year of study, with the greatest number of students in the theaters, conventional lectures are gradually suppressed and replaced by MOOC courses. The program manager recognizes that this shift does not occur easily, and that students are not always enthusiastic. Classical courses continue to exist alongside with MOOCs and the transition, if done, will be sweet. Nothing is final yet.

A second use is that of remedial courses for students entering the university or those who failed to pass their examinations. It is the same for the acquisition of basic knowledge necessary for some curricula. So far the only help offered was a bibliography of documents and books and the students were left to themselves. MOOC can be seen as a progress because they do not pretend to replace a classical tutored education but want to be an additonal support.

To differentiate these approaches from the massive U.S. current use, one speaks of SOOC (Small Open Online Course) or TORC (Tiny Online Restricted Course). Coursera, for example, provides two instances: first, private, for internal use, connectable to a university portal, the second to the outside public. The first instance can be seen as a TORC.

Thus, the opening to a wider massive audience, outside the walls, is not the first concern of the Europeans: it is an added-value and a communication tool in the international ranking competition among institutions. However, this added value has a cost since a
MOOC requires a minimum of teaching staff to track participants. The massive appearance is envisaged as a means of recognition of the institution that requires only reasonable additional investment.

EPFL adds a third vision: with France, on one side, and German-speaking areas, on the other, they aim to develop their recruitment pool to francophone Africa. From this point of view it is similar to the vision of American universities for whom the use of new technologies has always been a way to expand their recruitment pool. The best proof is that the best American universities offer scholarships to the best students who have achieved their MOOC courses, a teaching that today delivers a simple certification, far from the degree of the same universities.

**MOOC Environment**

**Structure of MOOCs**

The operating environment of a MOOC can be described in four layers:

1. The environment of computer servers and software tool.
2. The technical support around the platform.
3. The central teaching support platform, working closely with the software people, in the same organization.
4. The local educational support within each university, to help teachers to produce and make courses work.

1. A MOOC course needs a virtual platform in the cloud. This is the only way to support the load changes, at a reasonable cost, depending on the number of users simultaneously connected, larger numbers in the beginning or depending on the day and hour. Otherwise additional servers should be ready to start to contain the peak load, and this is very expensive.

2. A MOOC platform requires IT staff to ensure good level operation. Managed in the cloud, these virtual platforms will minimize the number of specialists. The role of the staff is not only to ensure the conditions for a good production but also to open the virtual instances for each course (one course = one instance).

3. Pedagogical support staff is required, located in the vicinity of the software specialists, to train and advise the trainers located in each university. This is a fundamental level: exchange among these persons should help computer specialists to adapt platforms to the needs of the teachers and students. This level must interact remotely with universities and train local trainers.

4. ICT specialists (instructional designers, staff for filming and media) are needed in each university to support the teachers.

U.S. consortia (Coursera, edX, …) provide points 1 and 2, and point 3 up to full realization, against payment, but for a price of up to $ 250,000!

**Business model of MOOCs**

The business model of MOOCs should not be neglected, even in Europe. Registration fees have nothing to do with those of the United States, but the state financing will necessarily be limited in the coming years, and can not suffice to the needs. The problem of cost is actually shifted from students to schools and the nation but remains unsolved. Are MOOCs a solution to help in this direction to ensure a quality education at a lower cost? Nothing is less sure. People who have already build courses, provide very different
figures. The cost of equipment (mostly for video) is negligible and quickly pays for itself with the multiplication of courses. It is not the same for the support staff, both technical and pedagogical as well as for the teachers, who, often so far, are all or partially volunteers and therefore little or no counted. This may be one of the reasons why figures, to build a course, vary from € 20,000 to over € 200,000 plus annual maintenance. When compared to the cost of the classical main lecture approach, some specialists believe that the cost of a MOOC is up to three times more expensive [20]. However these figures are not able to take into account the effectiveness of both approaches which is being discussed.

Responsibles for connectivist MOOCs (c-MOOC), built with the tools available in the cloud such as YouTube, Google docs, give lower figures but no real study has been made taking into account the difference between x-MMOCs and c-MOOCs. Moreover c-MOOCs seem to require more involvement from their leaders, to the level of an apostolate!

The economic study of MOOC remains to be done.

It is the duty of each university to build its own courses. This requires human resources, skills and equipment that all do not possess. MOOCs require high quality documents and the existing ones, acceptable for internal use with a limited distribution, are no longer valid and must be rebuilt from scratch. This is especially true for videos because previous courses must be captured again to be dispatch correctly. Video courses should not exceed 10-15 minutes. This means that courses already filmed as they are presented in universities today do not fit anymore and must be captured again. At EPFL, for example, one hour of course requires four hours of video shooting with the teacher followed by 36 hours about for editing. The figures are of the same order at UPMC. The quality of written documents and figures must also be enhanced and require professionals. Depending on their complexity, their illustrations and the field of science, it may take many hours of work by specialists. The use of free documents, OER, minimizes this work but original documents are always required. Building the learning path, punctuated by means of tests and assignments belongs to the teachers and needs also time. A MOOC is a team work, a full-fledged project, which requires many people and a full range of qualifications.

EPFL estimates six months the time between the decision making and the provision of a course. A university may therefore switch only a limited number of courses per year in MOOCs.

The richest European universities, and the most advanced in the field of ICT, can best achieve some MOOCs each year. The investment, both in terms of staff as well as support, may quickly fizzle most of them. An external support, pooled across institutions, with a special additional funding, would be welcome. If, in addition they must operate a platform for mass access available 24h/24, 7/7, they will run out quickly. It is doubtful that European Higher Education Institutions are able to do better than richly endowed institutions, like Stanford and EPFL, that use external service providers.

In summary, no economic model is still established and the results will probably be different according to national organization of Higher Education.
Conclusion
It seems to us that managing its own MOOC platform, or among a few universities, is an illusion. The effort required to build the courses is already at the limits of what can provide most of the European universities. Thus it is more reasonable to focus on our own business, that is education. The better endowed institutions did not make this mistake and have outsourced the management and the access to the platform to an outside organization. As it does not seems likely that a European consortium will be born in a near future and since the major associations of universities (EUA LERU, …) have not yet defined their policy nor considered ways for such a purpose, the choice is so between U.S. consortia and regional or national consortia. The choice, for a consortium, is a political one because a MOOC course carries first the label of the institution before that of the consortium that hosts it.

Today, only UK has announced a national consortium. What will it be in other European countries? Depending on national culture and HE organizations, the solutions will be different and we strongly believe that the states have a role to play. Organizations such as TERENA [21] EUNIS [22] could find their place if they are transnational.

Universities, which want to open MOOCs, must, whatever the consortium, obey a quality charter. It means that they must be aware that they have to aggregate important resources to achieve this goal and to maintain the courses. The MOOC economy is not yet known but a MOOC has a cost and all universities do not have the resources and know how to successfully compete.

The MOOC phenomenon has passed the summit of the Gartner "hype curve". Critics are already emerging in the United States, about both the economic and the pedagogical model. It is possible that, in the fall, a number of American universities tend towards a model that joins the European model. Nevertheless massive courses will retain their importance, both to promote the reputation of the institutions and to widen their recruitment pool.

This model could be inspired by that developed by the Virtual University of Bavaria [23] where Bavarian universities fetch the courses they do not have the means to organize themselves. But this is another future development.

Opening MOOCs is first a political decision to be taken, depending on the country, at the right level of decision. This will must be accompanied by funds whose shape depends on the national organization of Higher Education.

Bibliography