

MOOCs and pedagogy: where are we heading?

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1. ABSTRACT

MOOCs are often considered as a technology and many realize, today, that they do not follow the well know Gartner hype cycle. In the US they have almost completely disappeared from the Gartner curve although they are still very high in Europe. But MOOCs are not a technology: they are a new means to acquire knowledge, using pedagogy, made available through technology, mainly the ones available through LMS and other social and collaborative tools. Thus they evolve not only through the available technologies but also much slower, at a human pace, through the slow movement of a changing pedagogy.

Up to now the technology of each LMS has constrained the teacher to its underlying pedagogy. The new generation of LMS, introduced with the MOOCs, is using the latest advances of the technology: cloud and cooperative services instead of a bunch of services constrained in a single platform. This will allow to completely rethinking the LMS models as bouquets of services assembled by pedagogical designers. Various bouquets, fitting various approaches to pedagogy, may be made available according to the wishes of the users either teacher or students. MOOCs have shown that the underlying technology permits to consider the generalization of flipped learning for large numbers of students. This will completely change the approach towards the new generation of the virtual environments in the universities towards a more user-centric approach. Instead of the institution the entry point will be the student him/herself.

The new technologies, beneath the MOOCs, permit to acquire huge amounts of data about student's activity. It induces a move towards their analysis and building alerts to inform in real time both the students and their tutors of possible difficulties. This will completely transform the methods to follow the students and probably also to deliver the grades.

Some people have said that MOOCs are the end of the university. They are wrong: they are a chance to better fulfill its responsibilities. MOOCs are the match, which is igniting the light towards a better learning.

2. INTRODUCTION

At the last Educause conference, in October 2014, the word MOOC had completely disappeared. Instead most presenters spoke of Online Courses (OC). In the US a number of people express their disillusion but agree, at the same time, about a changing education paradigm (Mazou, 2014; Morris, 2014); some assert that the MOOC technology is disappearing from the Garner hype cycle before reaching the plateau of productivity and Tapson (2013) speak of a "very slow tsunami". At the same time the number of available MOOCs continues to grow rapidly (Shah, 2014) and a recent report of EUA (Gaebel, Kupriyanova, Morais & Colucci, 2014) confirms that a number of European Universities believe in the future of MOOCs for two main reasons: enhancing their international reputation and contributing to a change in the pedagogy. The yearly report from the Open University in UK (Sharples, Adams, Ferguson, Gaved, McAndrew, Rienties, Weller & Whiteloc, 2014) confirms this last view and explores an impressive number of advances in modern pedagogy linked to technology.

Sebastian Thrun is able to raise \$ 35 Million for Udacity (Forbes, 2014) and Koller (2015) from Coursera, in an interview at the Wharton School declares that, in two years from now, she will be able to compete with most colleges to offer a better and cheaper education and has no fear that her private partners will leave her company.

All these declarations by people, experts in the field of ICT for teaching and learning, are rather confusing and may either lead to pessimistic or optimistic views about the future of MOOCs in Higher Education.

In this paper we will express our views and explain why MOOCs will continue in various forms and how they are transforming the pedagogy landscape.

3. MOOCS AND PEDAGOGY

Let us first comment the pedagogic aspects of MOOCS. The word MOOC, Massive Open Online Course, expresses many ideas together: the two most important ones, which have rocked the world of education, are Massive and Open. Online courses, by themselves, are nothing new and are being used in many universities, on a limited scale, since a long time: the Open University in UK was an ancestor. In fact one may go back to the 19th century (Watkins, 1991)!

Massive courses imply that the personal relationship, which, to some extents, exists in conventional teaching, must be replaced by another pedagogical approach. This led to the introduction of flipped learning. The flipped learning approach also is not new. It was called differently such as “student centered”, “learning by project”, and has been used by many teachers. The Teluq, the Distance University at Université du Quebec in Canada (<http://www.teluq.ca>), was certainly one of the first pioneers in this approach. However one must admit that flipped learning remained a niche approach until the raise of the MOOCs.

What is really new is the Open approach, which means that anybody is entitled to register in a course, without any control about his/her prerequisites of the basic knowledge needed to successfully participate. Another innovation is that the notion of graduation and of a coherent curriculum vanishes, replaced by certificates. Students follow the MOOCs of their choice, for their own reasons without the obligation to build a coherent portfolio as in a conventional study. This Open approach is the most delicate aspect of MOOCs: how to teach to massive numbers of students whose background is very diverse? In countries, where Higher Education is freely open to all students who have successfully achieved High School, universities are aware of this problem and have been trying since many years to solve this difficulty without success. This is certainly one of the reasons why the failure rate is so high for MOOCs (Hollands & Thirtali 2014).

However most teachers will agree that MOOCs are moving the Higher Education landscape. First of all, the flipped pedagogy is entering the university, starting from the amphitheater where more and more teachers oblige the students to play a more active role, introducing sequences where students must work and discuss together (see for instance Rudolph, Joyce, Lahmine & Boissé 2012) up to a full reorganization of the curriculum where the course is now divided in two parts: fundamentals are learn through online courses, applications and problem solving in face-to-face sequences. When MOOCs are employed in this context they are no more massive neither open since the registered students possess the prerequisites to participate in the course. This is why they are called SPOCs (Small Private Online Courses), private meaning that they are reserved for a selected small audience. They use the same environment as MOOCs for the online part of the course. EPFL, in Europe, was one of the first universities to adopt this approach to pedagogy: students work by themselves, in groups or alone, part of the week. Quite often they meet in the library or elsewhere to watch the videos and learn together. The MIT, for instance, is far ahead: they are in the process of reshaping their catalog of courses, cutting the courses into shorter modules, of the order of six weeks (the standard length of a MOOC or SPOC) so that each course will be able to use a blended approach, part on line, part face-to-face. They have not decided to introduce a blended learning everywhere but the desire is to facilitate this approach whenever appropriate (UNR Paris-IdF 2014).

MOOCs are not a technology. They are a new means to acquire knowledge, using pedagogy, made available through technology. This pedagogy can be applied either in the conventional institutions or at a massive scale like COURSERA or EdX and their European sisters MiriadaX, FutureLearn, FUN, Iversity... MOOC have made the Senates and High Executives sensible to this new approach but the motivations vary from promotion of the institution to recruiting students and transformation of education (Epelboin 2014; Gaebel, Kupriyanova, Morais & Colucci, 2014; Pomerol, Epelboin & Thoury 2014; Pomerol, Epelboin & Thoury, 2015).

MOOCs and their avatars such as SPOCs have certainly moved the traditional approach to teaching out of balance. It means that the pedagogy is shifting towards a user centric approach. This has been

made possible by the introduction of a number of new technologies and especially the social ones. Students use them in their private life and start to use them in their daily work.

For the pioneers, who, since the beginning of this century, have been working in this direction but had difficulties, to convince their fellow professors and to extend their experience to the whole community, this has raised immense hopes.

4. MOOCS AND TECHNOLOGY

MOOCs environments can be described have a bundle of technologies. Very few are new: most of them already existed in the first generation of Learning Management Systems (LMS); a few are new or seldom existed in most platforms, such as peer assessment. Some, such as the forums, were rather unsuccessful. Around 2005, I remember a WebCT users conference, in Barcelona, where many of us complained that our forums were empty, except in the places where distance learning existed. What has made the forums successful, nowadays, in MOOCs, is the distance between the participants and the desire to share a community. The MOOCs platforms are still in their infancy. When compared to the conventional LMS, their possibilities are very limited and the number of available tools very short. Some universities continue to use their own LMS and the main advantage, nowadays, of the MOOCs platform is their capacity to support large numbers of concurrent users.

LMS are digital means used ... for learning and teaching, which implies that they are at the service of pedagogy. There is not a single method for teaching or learning, pedagogies are diverse. LMS try to meet, as well as possible, this expectation. Since different expectations coexist there are different means to meet the different visions of their designers. For instance, Moodle is organized around a pedagogical vision on how to learn, giving little choice to the teacher in the way to proceed. Sakai is much more neutral, does not give much hints to the teacher of how to organize his course and highlights the collaborative aspects. In practice it is always possible to get out of the vision of the designers but this can be difficult. An expert, who has his own ideas of e learning, may feel constrained with Moodle environment. On the other hand a beginner will find it difficult to build his/her pedagogy in Sakai for lack of guidance.

From the educational point of view the ideal platform does not exist. All LMS offer a different vision of teaching and learning. What the user would need is to be able to choose his/her favorite approach available from the various services of the different LMS. He should be able to compose his/her bouquet of services, choosing tools available in different LMS. The expert will compose his/her own bouquet; the non-expert will make his/her choice among bouquets already prepared by the experts, i.e. by the pedagogical designers of his/her institution. He would later enrich his/her course adding new tools and approaches. We are very far from this idealistic view! All services are confined inside their platforms and the standardization is not enough advanced to allow to plug some services of a given platform into another one.

The present MOOCs platforms are today very constrained and too “x” and not enough c “oriented (for the differences between x-MOOC and c-MOOC, see for instance Hollands & Tirthali (2014) or Pomerol, Epelboin & Thoury C. (2015)).

The appearance of a new generation of LMS, required to fit the needs for massive courses in MOOCs, is shivering the LMS world. The first generation LMS are coming to their end unless their core functions are completely rebuild on new concepts and technologies, being used in the MOOCs platforms. MOOCs platforms will merge, in a near future, with a new generation of LMS using the same technologies: a cloud approach and the collaboration between independent services, each of them running separately. MiriadaX (2015), for instance, is starting to move in this direction (BuiltWith 2015). The services will communicate through standardized interfaces in the spirit of LTI (IMS Global 2015).

It will thus be possible to build the bouquets and assemble services to fit various pedagogies. Pedagogical designers will also become services designers.

5. A USER-CENTRIC E-LEARNING APPROACH

One of the main impacts of MOOCs, in universities, has been to create a dynamics towards a blended learning approach; which, up to now, remained in a niche. MOOCs being based on a flipped pedagogy have shown that the underlying technology permits to consider the generalization of this pedagogy

for large numbers of students. This is the most important conclusion: MOOCs have demonstrated that technology can be of great help in a more user centric approach of pedagogy.

A few years ago, we suggested (Epelboin & Lévêque, 2010) the following vision for the future of the digital university (Figure 1).

As a member of the university community anybody, student and staff, has access to a number of services through the portal (light green ellipse), which is the entry point in the digital university. The user's profile is decided and managed by the university authorities. Thus the user has limited possibilities only to organize his/her space and choose his/her services.

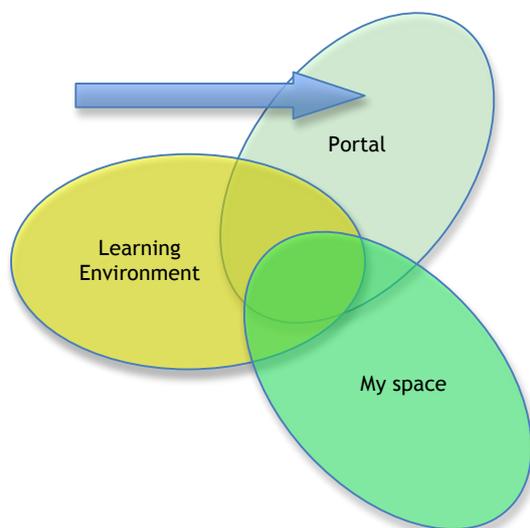


Figure 1: the digital university as seen in 2010

The user can manage his/her relationship with the other members of the community in the “My space” ellipse (intense green) only. In this ellipse the person may establish links with other, share documents... This is the social part of the university where anybody is free to establish his/her communities.

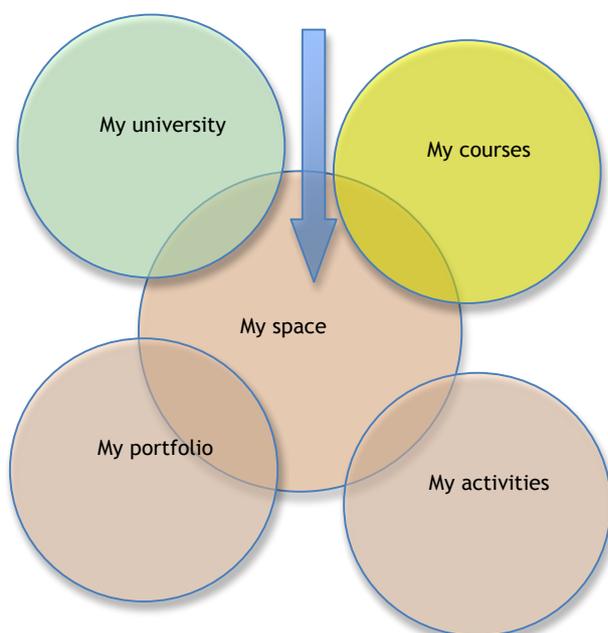
The yellow ellipse (Learning environment) represents the LMS environment, where the teachers assemble their students and organize the exchanges and the roles.

The ellipses cross each other because a number of services are common to the three spaces, such as mail, EDM (Electronic Documents Management)... but with a different view. For instance, in the LMS, exchanges are limited to the students and teachers registered in the

course, in EDM the documents seen in the LMS are not the same than the ones seen in the institutional ellipse “Portal”.

MOOCs, the flipped learning approach and social web tools have made this image completely obsolete. The introduction of massive courses, where the face-to-face interaction cannot exist anymore, lead to the idea of flipped learning. Flipped learning itself put the student in the center and was made possible with the introduction of social web tools. The digital university, although it continues to preserve the face-to-face interaction, is now in the obligation of reorganizing itself, putting the user in the center, according to the scheme of Figure 2.

The entry point is now the student space, where he/she organizes his/her network of relations, manages the visibility of his/her documents and decides how to share them. He/she has access to diverse spaces: “My courses” for learning, “My university” for his/her schooling and other matters relative to his/her study. Other services are not drawn on this figure, such as the library environment and many other services.



The student builds his/her portfolio and, under some controls from the teachers, may also let potential employers access to his/her production.

“My activities” is an example of other available services, available but not mandatory, such as sport and cultural activities provided on or outside the campus.

The number of satellite circles is not limited. What must be understood is that a number of

Figure 2: The digital university as seen in 2015

opportunities are offered to the student. Some are automatically opened, such as “My courses”, other such as “My activities” are spaces where the student can shop.

The entry point, as indicated by the blue arrow, has moved from the institutional portal towards the student personal space and reflects the user-centric approach. This is very important and must be reflected in the design of the user’s interface.

6. DRIVING STUDENTS TO SUCCESS

It is not possible to finish this review of how MOOCs are transforming teaching and learning without mentioning personal data and learning analytics.

Universities are accumulating more and more information about the activity of their students. Their amount and meaning depends on the sophistication of existing services (are these services able to register information of interest?) and their urbanization. A number of services, today, do not contain much information of interest because they are old and were not thought for this purpose. MOOCs have given the impulse towards the analysis of any kind of interaction with any service such as library, social activities, LMS of course, students information systems... all parts of the so-called learning analytics. It has become a subject of research by itself (Sharples, McAndrew, Weller, Ferguson, Fitzgerald, Hirst & Gaved, 2013). Some universities start to build interfaces to analyze their huge amount of data and make them available to the students and to the teachers. Alerts can be automatically sent when these data reveal an uncommon comportment, for instance if a student does never retrieve the documents of his courses or does not go to the library. Data analysis and automatic alerts will become a key factor to increase the success of the students, especially in the first year when they arrive in the university and must adapt to a new working environment. More than the pedagogy induced by a blended learning approach itself, giving to the students and their tutors, pertinent alarms may become tomorrow the key to increase the student’s success, especially in their first year of study.

There is certainly a great interest in building early alerts to take the right action when a student may “loose ground” but this raises many questions.

First of all, to whom belong the original data? The right answer is the person him/herself and he/she should have access to all of them. Their circulation should be limited, inside the university, to a group of people, very well defined. A teacher is entitled to retrieve the information about student’s behavior in his course but not all the courses. Trained tutors should be the sole persons to have access to the whole data about their students, under strict regulations. This raises numerous questions, both ethical and judicial, and this important problem should be solved at a European level.

A second question is the pertinence of the indicators. For instance, what does reveal accessing the documents about the fact that the students read them or not? Ten years ago, one of my courses was on the web, converted into HTML. A number of students came to the lectures with a pile of paper, being the printed version of the course, including the contents of the hyperlinks, and the students nicely explained to me that they preferred the printed version. One of them had done the job of downloading all the files and had made copies available to all his fellows! Thus the web server indicator about access to the documents lost its meaning.

MOOCs have started a move towards the analysis of all the data left by the students in our systems and this will completely transform the methods to follow the students and probably also to deliver the grades. This is a subject by itself for another paper.

7. CONCLUSION

MOOCs are not a technology: they are a means to acquire knowledge. They are build, using a bundle of evolving technologies. This why it is difficult to locate MOOCs on the Gartner hype curve. They are shacking the conventional pedagogy putting out of balance the old methods of teaching and learning. But pedagogy is a slow process, thus MOOCs, SPOCs and their avatars are moving slowly our universities. It is a very slow wave, slowly flooding our landscape. Students as well as teachers will have to adapt to new ways of learning and teaching. It is now recognized that blended learning is becoming the most efficient way of learning and MOOCs will participate in this change. Universities need trained staff to support this change, the ones who have been battling since the beginning of

this century to promote e learning. It is not an easy move and it is not the end of the classic universities. MOOCs are becoming the new Open Educational Resources (OER) and will be used as them. As Koller says (2015) a good MOOC is better than a poor face-to-face course but nothing is replacing a good human interaction.

This will require a new generation of environments: LMS, social and collaborative tools student-centered. Building an adapted teaching environment for each student and course will require a new generation of professionals, at the same time software engineers, course designers and teacher. Building a course will no more be the individual adventure of a professor, alone in front of his/her class but teamwork. This is a complete redesign of the actual job.

The balance between face-to-face and distance learning will vary depending on the subject, on the policy of the universities and students demands. For those unable to attend the university, in less-developed countries and any place, where there is a need to increase massively the number of attendees with a limited budget, MOOCs will provide a part of the possible solutions (Epelboin 2015).

Some people have said that MOOCs are the end of the university. They are wrong: they are a chance to better fulfill its responsibilities. MOOCs are the match, which is igniting the light towards a better learning.

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