

# A new participative space for MOOCs: overtaking technological evolution to achieve educational innovation

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**Abstract:** The prime aim of this paper is to take a critical look at current MOOCs in order to demonstrate that the alleged techno-educational innovation is generally little more than a manifestation of the divergent interests of the stakeholders involved. Any convergence of these interests is actually rarely linked with teaching or learning. In a second step, our objective is to present the approach developed by the Université libre de Bruxelles to minimise this divergence and overcome the technocentricity of MOOCs. This approach is singular in the sense that the whole production of these open online courses is being constantly fuelled by research aimed at designing systems fully meeting – from both an educational and technical angle – the needs and usages of their users, whether teachers or students. The technological, pedagogical and scientific implications of this MOOCs development process will be assessed.

## Introduction

1994 was a landmark year for humanity, marking the birth of the *World Wide Web*. That same year, William Geoghegan, an IBM consultant, caused a stir in the field of educational technologies with the publication of his paper titled “*Whatever happened to Instructional Technology?*”. With this publication, he highlighted and attempted to explain the persistent failure of ICT to penetrate the world of higher education, despite several decades of effort and massive investment (Geoghegan, 1994). Twenty years later, nothing seems to have changed: each new technology seems full of new promises, only to vanish increasingly quickly. The latest example: Massive Open Online Courses (MOOCs). Though these systems promised - and for many people still do - to revolutionise teaching and learning, to democratise access to knowledge and to provide new research perspectives, even the most fervent “MOOC-aholics” have their doubts. This is for instance the case of Sebastian Thrun, who put out a statement a year ago saying that “*MOOCs are a lousy product*”. The fact that this statement comes from him is even more interesting that he helped pioneer this type of system with his course on artificial intelligence which attracted an audience of 160,000.

This leads us to the following question: why, despite all the material and human resources invested by major academic institutions, do these widespread IT systems do not bring generally speaking any great educational value, and fall even shorter from bringing the much expected innovation to learning? With a view to answering this question, the prime aim of our contribution is to take a critical look at the current MOOCs using concepts of participation (Akrich, Callon & Latour, 1988) and participative space (Akrich, Callon & Latour, 1991). The underlying assumption of this article is that the alleged techno-educational innovation is generally little more than a manifestation of the divergent interests of the stakeholders involved, with any convergence rarely linked to teaching or learning. In a second step, our objective is to present the institutional approach developed by the Université libre de Bruxelles in its MOOC initiative, which intends to shift the center of gravity of the participative MOOC production model towards teaching and learning.

## Techno-educational innovation as a participative space

The world did not wait for Geoghegan to discover that the majority of higher education teachers remain cautious when it comes to integrating technology into their teaching, despite the decades-long litany that ICT will revolutionize higher education. Though the percentage cited by Geoghegan with regard to the proportion of teaching staff using ICT is not supported by any serious research, the overall finding has since been backed up by a large number of research projects (Karsenti et al., 2011). There are four reasons explaining this low penetration (Geoghegan, 1994). First of all, it was wrongly believed that the potential target of ICT was a single, homogeneous group, with no attention being paid to the fundamental differences separating the few early adopters from the mainstream. The objective alliance between these early adopters, the “support centres” and the software developers is the second reason: these three stakeholders quickly discovered a common language, unfortunately radically different from and not understood by the majority of teaching staff. Thirdly, the successful projects conducted by the early adopters turned out to be unproductive in the sense that the implementations and examples trumpeted by the early adopters seemed out of reach for the mainstream, *in fine* alienating and discouraging them rather than encouraging emulation. Finally, one crucial element needed for bridging this gap was missing: “*a compelling reason to buy*”, i.e. an application where the benefits far outweigh the costs - in terms, *inter alia*, of personal investment.

Geoghegan's analysis is echoed in the participative model, defined by Akrich, Callon & Latour (1991) as a new way of understanding the success of an innovation. Traditionally, a product's intrinsic qualities are used to explain the speed at which the innovation can spread (Akrich, Callon & Latour, 1991). This is backed up by Rogers (1983), who sees five factors determining the adoption or rejection of an innovative product: relative advantage, complexity, compatibility, testability and observability. The analysis of an innovation thus involves identifying the strengths and weaknesses in each element. By contrast, the participative model is based on putting innovation in its proper context: To understand success or failure, i.e. diffusion and the associated ups and downs, we need to recognise that a product will only be taken up when it manages to gain the interest of a growing number of consumers (Akrich, Callon & Latour, 1991). In this context, the participative model highlights the existence of a whole bundle of factors linking the product to those using it. It highlights the bonds between the product and the more or less organized interests it arouses (Akrich, Callon & Latour, 1991). In other words, the success of an innovative product is not dependent on its intrinsic properties but on its capacity to bring together a large network of stakeholders, whether system builders or system users. The model highlights the collective dimension of innovation, as the fate of any innovative product is dependent on the active participation of all those who have decided to support its development (Akrich, Callon & Latour, 1991). Their participation is thus dependent on their interest in the product, i.e. their expectations or even the problems they are faced with. Nevertheless, participants' degree of interest will often be different, or even divergent. For an innovative system to be successful, it is therefore necessary to shift the goals and to find the common denominator amidst the different interests in order to reposition these goals around a joint project. Encouraging the convergence of participants' interests, such a project becomes a 'participative space', a space in which compromises, adaptations, participative actions and alliances are necessary; Reflecting the participating groups, their interests, expectations and plans, a reconfiguration takes place. (Rayou, 2004).

### **MOOCs: a technocentric participative space**

From the perspective of such a model, MOOCs form a technocentric participative space linking the interests of a range of stakeholders. Firstly, universities wish to improve their visibility, boost their reputation through the use of such systems (Cisel & Bruillard, 2012; Boullier, 2014) and even attempt to attract new – top-performing – takers for their on-campus courses as well as new learners for their online programmes (Mangenot, 2014). Secondly, teaching staff invests effort, often without financial reward, in the hope of gaining added value for their own research – and sometimes their teaching – activities. Thirdly, on-campus students take up such systems as an innovative way of learning – often in combination with a 'flipped classroom' (Mangenot, 2014), while off-campus students can pride themselves on belonging – at least virtually – to the top universities or on continuing their lifelong learning (Boullier, 2014). Fourthly, university techno-pedagogical support departments view it as reinvigorating their work, up to now dominated by providing technical support to teaching staff with regard to online learning platforms. Fifthly, politicians pounce on MOOCs as a way of enhancing what they are doing in the field of higher education, as seen in France where the Ministry of National Education is investing heavily in *France Université Numérique*, its new university IT platform. Sixthly, hosting platforms as well as e-learning content providers can see signs of the establishment of a new market (Karsenti, 2013). Finally, the media are making it a hot topic, coming up with a plethora of articles and reports on the subject. At the end of the day, all these divergent interests find themselves prosper comfortably within the current MOOCs.

The participative space created by the MOOCs is mainly technocentric: far from meeting learning needs or promoting new teaching practices, the institutions' goal remain solely to produce MOOCs and to generate figures – i.e. to have an important number of subscribers (Karsenti, 2013; Boullier, 2014). As a result, the acronym MOOC tends to reflect contrasting realities. Although these courses claim to be massive, often with – tens of – thousands of enrolled students, the facts demonstrate that 50% drop out after the first week, 10% actually end up taking all modules and only 4% actually gain a qualification. The open nature of these courses and the fact that they are free of charge tend to be highlighted in the media and by the system developers. However, these two characteristics sometimes collide with the legal reality of the Internet. Indeed in many cases there is a formal ban on using, modifying or disseminating a MOOC's educational content, which is to some extent contradictory to the concept of "Open Educational Resources". Moreover, monetization systems are beginning to appear. These courses – and above all the platforms hosting them – are dependent on a business model to guarantee their continuing existence and, thus, will use a series of different means such as hourly paid tutoring or a fee for a personal certificate attesting the satisfactory achievement of the course objectives, and advertising schemes. Moreover, though these courses are online, enabling anyone to follow them at any time, the requirement to have a stable, high-speed Internet connection may present an obstacle to the plans of the top universities to offer courses worldwide to a diversified audience, in many cases in developing countries. Notwithstanding the features making a MOOC a course, a number of pedagogical principles are regularly forgotten. In many cases, such systems are limited to transmitting audio-visual content – i.e. offering a

slideshow narrated by a teacher or a very static "stand-up" shot in a studio –, online activities – i.e. for the most part multiple-choice questions as well as, increasingly, activities with peer assessment –, and discussion tools – mainly taking the form of a forum or a wiki with low student participation (Kop, Fournier et Mak, 2011 and Manning et Sanders, 2013 in Karsenti, 2013). MOOCs thus merely use the set-up and layout from most lectures and memory-oriented tests (Boullier, 2014). Finally, it is only necessary to inspect a few MOOCs to uncover a relative amnesia with regard to recent research on online learning: an absence of pedagogical scenarios, assignments hardly matching content, an absence of tutors, assessments without individualised feedback, etc. As for interactions with the teacher, these are relatively rare: Covering 103 teachers who had designed a MOOC, the survey conducted by Kolowich (Karsenti, 2013) demonstrated that interaction with students was on average limited to a comment posted in the course forum once a week. Within MOOCs, the ultimate incentive seems to be, for all players, the number of enrolled at the beginning of the course. All the focus remains on this figure, although, as mentioned above, it can decrease very quickly. Therefore, it is understandable that under these conditions, there is no need to invest in risky pedagogical innovations as it seems rather better to provide the public with what it knows: lectures marked from the label of major universities (Boullier, 2014).

### **Shifting the participative space's center of gravity: the policy of the Université libre de Bruxelles**

With a view to examining the potential of Massive Open Online Courses, in October 2014 the Université libre de Bruxelles gave its ULB Podcast unit the task of implementing a project based on action research. At the start, the objective was to develop four courses.

Their production was based on two complementary theoretical methods: design-based research (Design-Based Research Collective, 2003) and AGILE (Beck & al., 2001). The former combines the development of a system – in our case a MOOC – and an analysis of its impact with a view to developing new theories. In contrast to predictive and experimental research, in which experience is used to test theory-based hypotheses and thereby further develop the theory in question and perhaps find applications for practitioners, the aim of design-based research is to analyse a practical problem through having researchers and practitioners work together. These then develop, via iterative cycles and successive improvements, solutions based on existing design principles. The development process is, at the end, thoroughly reflected on with a view to arriving at design principles and enabling improvements for the solution's implementation (Reeves, 2006). The second theoretical method, AGILE, is an iterative, incremental and collaborative method, with just the right dose of formalism, and generating a high-quality product while taking account of developing needs.

What is more, the work of the ULB Podcast unit, set up in 2010, has developed a user-centric approach (Roland, 2012). In an effort to strengthen the pedagogical dimension and enhance the learning impact, the design process of the MOOCs took account of the needs, expectations and characteristics of both teaching staff and potential learners right from the start. This user-centric approach is also being used in the scientific assessment of the MOOCs. Looking beyond the data, the aim is to get teaching staff and students interested in the project. This in turn demonstrates the importance of the active role of individuals to interpret the changes brought about by the system. This discussion prior to the introduction of Massive Open Online Courses at the Université libre de Bruxelles was tested, within the ULB Podcast unit, in the context of a similar action research project on podcasting (Roland & Emplit, 2015). The findings have demonstrated the value of the work undertaken, resulting in the development of an innovation project centred on pedagogy and learning and maintained over time.

### **Three-dimensional implications: technical, pedagogical and scientific**

Looking at the technical dimension, the design-based research approach allowed the development of tools perfectly matching how they are being used. Technological development is thus continually influenced by the significance accorded to MOOCs by users, by the way in which they adopt the MOOCs and are able to influence certain functions. This in turn makes MOOCs more responsive to users' needs in terms of teaching and learning. In this context, ULB Podcast has already developed, through analysing student usage of pedagogical videos, an enhanced audiovisual player including a function allowing users to interact with the video. Both students and teaching staff have the opportunity to include temporal bookmarks (a title, a description and keywords related to a specific time) as a way of annotating, sectioning or summarising their videos. Moreover, with the aim of encouraging collaborative practices with regard to these bookmarks, ULB Podcast has included a simplified bookmark export/import function. As of February 2015, the player also contains a chat system synchronized with a specific timecode in the video.

Looking at the pedagogical support for the MOOC designers, the approach used concentrates on supporting them throughout the production process and in particular before the recording. This support ranges from the initial interview with the teacher to discuss the ins and outs of adapting a course to MOOC format to the production of the educational documents, via the scene-setting in the form of a storyboard, an analysis of student behaviour with a view to improving the product, and possibly even via the in-depth technical aspects.

Indeed, these different steps should by no means be overlooked as the pedagogical investment before the actual production of the MOOC can help avoid overloading the cognitive processes involved, and even help improve comprehension, persistence and/or motivation. Through using our design-based research approach, ULB Podcast has now developed in-depth knowledge of how to didactically transpose scientific and/or pedagogical content into an audio-visual support tool using the most suitable media. It now produces audio-visual material – recorded courses or modules – taking into account the properties of an efficient educational video based on its research results.

Turning to the scientific dimension, the aim is to produce a longitudinal axis between the MOOCs production process and their adoption by learners. This allows for feedback and a basis for reflection for researchers, designers and techno-educational teams ultimately leading to improvements for future MOOCs. This research is based on a mixed approach aggregating a quantitative part (learning analytics and surveys) with a qualitative part (interviews, anthropological analysis of behaviours and logbooks). This scientific approach, though of fundamental importance, as yet hardly features in the field of MOOCs. Moreover, given the investment of teaching staff both in the production of their MOOCs and in the recasting of their in-class courses, it is essential to get them interested in Scholarship of Teaching and Learning (SOTL). The aim here is to get teaching staff who produce MOOCs to reflect on university teaching practices through the window of their personal experience.

### **Action research as a driver of innovation in university teaching**

As far as MOOCs are concerned, Cisel (2014) stated recently that the phenomenon is still in its prehistory; technologies employed are still rustic and scientific knowledge is just beginning to take shape. In our view, this is incorrect. We consider the Massive Open Online Courses as a new avatar of distance learning and the product of twenty years of research, which have provided a better understanding of teaching and learning practices. To conclude, the goal of the ULB's deployment of MOOCs is to systematically enrich these systems with the technical and educational elements that are too often missing, helping them to become real learning tools promoting success and emancipation. It is essential to link the production of such systems with research work based on a combined – quantitative and qualitative – methodology, using a design-based research approach promoting iterative improvements to the system. Looking beyond current MOOC production – in many cases done without much thought, in haste, without support and technocentric –, other paths are possible.

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