Boom-bust of MOOC platforms: crisis of an eLearning model?

Raquel Poy[1], Audilio Gonzales-Aguilar[2],

[1] Universidad de León-Facultad de Educación, Campus de Vegazana, s/n
24071 León, España, rpoyc@unileon.es
[2] Universidad Paul Valéry Montpellier 3-Departamento de Documentación,
IRSIC, Institut de Recherche en Sciences de l'Information et de Communication
Route de Mende, 34199 Montpellier Cedex 5, Francia audilio.gonzales@univ-montp3.fr

Abstract. This paper presents an evaluation of the main Mooc platforms from the point of view of instructional design. The main focus is on the models and strategies that educational organizations are promoting for these e-learning products. The result of the evaluation shows that there are flaws in the results for the high rates of dropping-out by users, and the limited scope in the allegedly massive global access or the digital divide detected between the different groups of user profiles. These problems could be explained by a deficit in the approach of the pedagogical models used for its design and construction.

Keywords: Massive online open courses, e-learning, digital divide, educational dropping-out, educational software, instructional design.

1 Introduction

Courses Mooc format, in English stands for the concept of Massive Open Online Courses or Massive Open Courses Access, are a recent development in the field of e-learning or distance learning, which allows through participatory forums the accomplishment of training activities in which the degree of involvement of teachers and students is higher than traditional e-learning products such as videos, lectures and practical exercises. This concept appears in frame of connectivism (Kop & Hill, 2008).

For some analysts, Web 2.0 tools behind these new forms of e -learning cause a transformation of social space by offering new learning opportunities to individuals new opportunities of learning, breaking the traditional barriers of time and space of formal education in the global model e-learning and that was based on being closely monitored by the teacher or tutor (Brown & Adler, 2008; Kop, 2011; Esposito, 2012).

The rise of Web platforms that offer this type of courses led some to note that 2012 was the year of the MOOC and even the first glimpse of the hopeful era MOOC 3.0[1]. However, these same analysts, two years later, begin to sense that not everything goes as quickly as it appeared.

Early platforms provided open-access features such as open licensing of content, structure and learning goals, to promote the reuse and remixing of resources including images, video and any other online content type imaginable. Later MOOCs use closed licences for their course contents while maintaining free Access for educators and students. These platforms are used for websites that normally have multiple learning programs and sections and are used as the foundation on many large websites that include universities, enterprises or non-profit organizations. A recent study on development of literally hundreds of new Learning Management Systems (LMS) showed that open source platforms are leading the growth of global MOOC adoption for the eLearning institutions[2].

Inasmuch as seven years, the rapid rise of MOOC platforms has led to centers and educational institutions around the world to have their own strategy (Kohler, 2013), if not a platform with lower or higher level of development[3]. However,

[1] http://www.ecampusnews.com/around-the-web/american-higher-education-and-the-Mooc-3-0-era/.
[2] http://edutechnica.com/2013/10/15/data-driven-campus-lms-strategy/
[3] This is the case particularly Courlis http://courlis-pf.univ-lorraine.fr/ (applied statistics courses), Santa Fe MOOC http://www.santafe.edu/Mooc/, o Crypt4you http://www.criptored.upm.es/crypt4you/portada.html.

under the light of current studies about this phenomenon, one might wonder whether the boom and the turning point are happening at the same time in this rapid growth. Are we witnessing a crisis in the MOOC model?

In this paper we analyze, from an exhaustive sampling of the major initiatives in MOOC Platforms, if there exists at this point any possible approaches that are blocking the success of the MOOC.

1.1 Analysis of MOOC Platforms

We have selected the whole MOOC most popular platforms, in order to reflect the volume of courses and students that have achieved to date (see Table 1).

As a general consideration of MOOC, first of all the absence of transparency in its statistical figures is worth noting, although for logical reasons the visibility of the number of courses offered in their catalogs is easy to collect, sometimes the course format is not standard or comparable, since in many cases called "class" to simple lessons are just 3-5 minutes in length and do not require the minimum academic track, as in the case of the Open University platform (OpenLearn). Second, when a platform reveals the number of students acquired or accrued, does not distinguish which maintained a full education on their platform or if the user is repeatedly counted as different people. Nor data about success rates or educational neglect, but in some cases are advertised or listed in ad hoc studies, confirming that abandonment rates average ranging between 75 and 95% of most of the courses, as we refer as follow:

- **High rate of abandonment.** In general, confessed dropout rates range between 75 and 90% on average. This estimate may be realistic given that sometimes is counted as student who has passed the course the one that has not had to overcome a control by a third party to verify that indeed has achieved its objectives. The first user study suggests that the high dropout rates may indicate an error in the user-centered design.

In-depth study of the first course of the EdX platform, developed by a consortium led by MIT and Harvard University, and that brought together a staggering cipher of 155,000 students between March and June 2012 (Breslow et al., 2013), notes that only 10% of students passed the course, and only 3% participated in the open discussion forum on the course. As for the students who obtained the certificate of completion of the course, their participation in the forum itself would have exceeded 53%.

- **Uncertainty in the business model MOOC.** There is in the MOOC an economic and strategic model, sustained by innovation and interactive marketing (Derycke, 2013). Platforms have not defined a proven business model and are located between EdX advertising strategy and still positioning in a subscriber market at venture capital. Coursera raised up to $65 million venture capital fund for college consolidation in the market during 2013, and Canvas de Instructure followed the same path with an expansion to $50 million in its fifth year running. Economic return levels declared by the promoters do not seem to point the optimism. No doubt the main reference of this set of platforms MOOC is the non-profit organization founded by Harvard and MIT, renowned EdX, whose declared principles are expanding globally higher education for any student, advertising the high quality level of educators of their institutions, including their partners at the University of California- Berkeley and the University of Texas, under the slogan "the best teachers and universities", and including a curious call to the ability to make friends through their participatory networks.

In this sense, Teplechuk questions the corporate strategy as the business model underlying this kind of free and open courses is sustainable only by an effort to achieve side economic returns (e.g.: fees for issuing certificates of completion of the course), which with an average rate of students who pass the MOOC courses that just overcome the 12%, in this case on MOOC the Edinburgh University platform, makes them remarkably deficient (Teplechuk, 2013).

- **Objective of universalization not achieved.** Third, the intended goal of democratizing and extending free and massive global higher education through technology, could be failing under the results on the extent of MOOC courses among the target audience. Studies that proliferate on the phenomenon MOOC suggest that mass access is uneven depending on the profiles that students exhibit in such platforms, implying that the digital gap is reproduced in new forms in face of these platforms, and resulting benefit the elitist academic and professional community, along with advanced users of new technologies and belonging mostly to developed countries.

2 MOOC and the problems of educational design

In order to analyze from the point of view of pedagogical design, construction of the different Mooc platforms, we used the model of Freitas and Jarvis (2007) that takes into account three elements of analysis plus the representation: context, learner, and pedagogy used, in addition to the digital representation of the e-learning product, as a fourth additional element.

Pedagogical design of MOOC platforms need to keep in mind :

- First, the theoretical basis of the pedagogical model that supports to determine the educational needs that they must respond when it comes to pedagogical design of virtual learning environments, whose characteristic feature is that the interface between the learner and designer of the educational practice is the technology (Garcia, 2002).
- Second, both the MOOC platforms and other e-learning products –educational software 3.0 including for example the so-called serious games or Digital Game-based Learning— respond to the need to employ innovative methodologies for achieving impact training in the field of teaching and learning processes in virtual learning environments , primarily in the degree of active participation provided to the subject of learning (Prensky, 2010).

Thus in both cases, MOOC platforms respond to this new demand for innovative content for the new generation of users increasingly immersed in the knowledge society and information (Krichen, 2007).

2.1 Platforms truly interactive?

It is precisely these interactive engagement tools derived from Web 2.0 that make MOOC Platforms in environmental or situational learning tools.

In MOOC platforms the learning environment is virtual, as learning is not taking place in a particular place and played virtually a classroom or space that meets the conditions to optimize the learning process by promoting the acquisition of contents, experiences and pedagogical processes, from dialogic activities that facilitate knowledge exchanges (Avila & Bosco, 2001).

However, the level of participation that seem to show MOOC courses users appears to be far from the purpose that animates its interactive design. A study in progress by Katy Jordan, University of Texas, for a total of 29 MOOCs, warned that the success rate was only 6.8 % and five of the six courses with the higher success rate had no control or third party assessment of the level of acquisition of knowledge or skills by the student, so that the actual rate might be lower (Parr, 2013). Other case studies agree dropout rates averaging between 80 and 95% (Cross, 2013).

A study conducted by the company Qualtrics and Instructure, Canvas platform and 425 U.S. top centers providers in MOOC environment, and has been published in July 2013[4] states that the main attraction of MOOC courses lies in particular in its free of charge character, with 75% of responses that prioritize this element as the primary factor in realizing them.

In any case it seems clear that the degree of handling digital skills (digital skills) results a predictor of the availability of such courses, together with the availability of network access that enables a simple computer or broadband (McAuley, Stewart , Siemens & Cormier, 2010). Mak, Williams, Roy and Mackness (2010) note that the preference for participatory tools tends to be by the forums, that allow demand strategies of rapid response to issues and concerns at the detriment of Blogs, which serve more as "slower" strategies for reflection and conceptual clarification.

2.2 Profiles unequal among users Mooc

A survey of Mooc platform users made in 2013 by Stanford University, points the differences in the profiles of students who are more likely to successfully complete these courses, and in general terms correspond to higher level students' education, U.S. citizens or countries with high levels of economic and industrial development. This would include in their level of management skills and understanding, so that designers should avoid excessive use of explanatory videos that produces greater difficulty in tracking students especially if they are foreigners or low educational level (Kizilcec , Piech & Schneider, 2013) . For the study of Breslow et al. (2013) is also noteworthy the significant presence of Spanish-speaking students (for EdX 17%, including Colombia with 6,000 and Spain with 5,000 students as fourth and fifth countries respectively in the ranking of countries with the largest number of students) behind the United States (25,000), India (13,000) and the UK (8,000), in its initial release.

In the same line, the study of Canvas platform coincides to analyze the profile of 1,834 students from the platform by the poll technique, in that it is a highly specialized profile with a percentage of 77% who have advanced degrees and 42% professional educators. Also agree that those who manage to successfully overcome these courses are particularly prone to the use of forums for participation and interaction in the community 2.0. A third of the students consumes such products frequently, which suggests a growing public loyalty more qualified in MOOC platforms.

[4] Cfr. https://www.instructure.com/press-releases/qualtrics-and-instructure-reveal-Mooc-students-top-motivations.

2.3 Pedagogical Model

The third element analysis of MOOC platforms focuses on the study of the pedagogical models that support them. Since this aspect is very broad and that this purpose is beyond the scope of this article, we merely list the three most influential models and that are at the base of building MOOC platforms: conductist, social-cognitive and situated or situational learning (Gros, 2002; Garcia and Martin, 2002; Freitas and Jarvis, 2007).

MOOC platforms are based mostly on a socio-cognitive teaching model, where students construct meaning for themselves, as evidenced by the presence of the variables that characterize this theoretical model.

However, we have observed how MOOC platforms have pedagogical design elements based in behavioral models, as evidenced by the fact that the platforms that contain information to be transmitted through the training tasks through exercises, where the step to the next level of difficulty is determined in advance.

Other methodological approaches found in MOOC platforms are limited within the theoretical foundations of situated learning, where the context acquires an essential role (Brown et al., 1989). This approach is very important and is at the base of some of the methodological proposals of MOOC platforms, in which from a complex and problematized approach and through group reflection new tasks are being proposed and challenges to solve by the participants on the platform, in order to simulate or represent figuratively assumptions applicable to a real environment.

2.4 Software Development Model

Our analysis shows a trend toward proprietary code platforms that intend to develop a business model based on communities of educators attached to them, with different economic return strategies such as pay for certificates or academic recognition in the form of credits, or by users' subscription or advertising formulas. The main alternative is the open source platforms, more accurately respecting the requirements of the MOOC concept. In this regard there are two major software development environments (see Table 2).

The release as open source EdX in June 2013, together with the prestige of the consortium that promotes it, makes it the greater projection software development in the field of public and open platforms, along with OpenMooc software which adopted in advance that opening strategy. EdX has been released under a software license AGPLv3 while OpenMOOC uses a more permissive Apache License v2.

3 Conclusions

The data indicate elements of weakness in student retention by MOOC platforms, as well as point to inequalities concerning access to these e-learning platforms. Also point to serious shortcomings from the standpoint of the design strategy of the platforms. Given the critical element that represents the interaction capability associated to MOOC courses, we find it necessary to address the analysis of the pedagogical models and their requirements before building a MOOC platform, so that we ensure that there is consistency between the conception of MOOC learning platform, and model or the underlying pedagogical models based a priori. It is striking studies like that from Khalil and Ebner (2013) point that the demand with more interaction from the MOOC students to instructors is an element of dissatisfaction. Is it possible that the Achilles heel of the MOOC is the lack of interaction with the teacher?

In this sense, with reference to the model of interactivity in e -learning developed by Salmon (2002) could be considered that the ability of boosting the motivation and participation by the instructor or moderator of 2.0 tools, results in some way essential to achieve progress in the desired steps to reach an active online learning (Salmon, 2002; Chen and Chen, 2007), so it would be interesting to compare the platforms from the point of view that they have motivation systems and interaction between instructors and students.

Consequently, one of the conditions to which one should pay more attention in pedagogical design of MOOC platforms, is the strategy of active involvement of the subject, being this a priority task at these Web environments (Norvig, 2012).

Our work in three-way reflective synthesis about the MOOC:

- The need to determine if the goal is the acquisition of skills or the need for having a certifying training. One would think that the two aspects are not particularly exclusive throughout life formation as it exists in the European Communities.
- The urgency of establishing a list of demands or a white paper of the essential elements in the MOOC. The creation of committees that integrate businessman, state representatives and academics.

- The balance between pedagogical designs, platforms and the adaptation of interactive tools in Web environments. Only this equation could answer a true educational innovation. Example for the serious games (Caron and Heutte, 2013).

References

Ávila, P. & Bosco, D. (2001). *Ambientes Virtuales de Aprendizaje. Una nueva experiencia*. Retrieved July 29, 2013, from http://investigacion.ilce.edu.mx/panel_control/doc/c37ambientes.pdf.

Breslow, L.; Pritchard, D. E.; DeBoer, J.; Stump, G. S.; Ho, A. D. & Seaton, T. D. (2013). Studying Learning in the Worldwide Classroom: Research into edX's First MOOC. *Research & Practices in Assessment*, 8, 13-25.

Brown, J. S., Collins, A. & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18, 32-42.

Brown, J. S. & Adler, R. P. (2008). Minds on fire: Open education, the long tail, and learning 2.0. *Educause Review*, 43(1), 1632, Retrieved July 30, 2014, from http://www.educause.edu/EDUCAUSE+Review/EDUCAUSEReviewMagazineVolume43/MindsonFireOpenEducationtheLon/162420.

Caron, P. &, Heutte, J. (2013) MOOC et gamification: vers une ingénierie de formation autotélique? Environnements Informatiques pour l'Apprentissage Humain. *Conférence EIAH'2013*, Toulouse. Retrieved October, 17, 2013, from http://ateliermooceiah2013.files.wordpress.com/2013/05/caron.pdf.

Chen, Y.-J. & Chen, P.-Ch. (2007). Effects of Online Interaction on Adult Students' Satisfaction and Learning. *The Journal of Human Resource and Adult Learning*, 3(2), 78-89.

Cross, S. (2013). Evaluation of the OLDS MOOC curriculum design course: participant perspectives, expectations and experiences. *OLDS MOOC Project, Milton Keynes*. The Open University. Retrieved July 25, 2014, from http://oro.open.ac.uk/37836/1/EvaluationReport_OLDSMOOC_v1.0.pdf.

Derycke, A. (2013) Pour une analyse critique des MOOC à la lumière de la nouvelle économie. *Atelier MOOC, EIAH , Toulouse*. Retrieved June 14, 2013, from http://ateliermooceiah2013.files.wordpress.com/2013/05/derycke.pdf.

Esposito, A. (2012). Research ethics in emerging forms of online learning: issues arising from a hypothetical study on a MOOC. *The Electronic Journal of e-Learning*, 10(3), 315-325.

Freitas, S. & Jarvis, S. (2007). Serious games emgaging training solutions: A research and development project for supporting training needs. *British Journal of Educational Technology*, 38(3), 523-525

García, A. y Martín, A.V. (2002). Caracterización pedagógica de los entornos virtuales de aprendizaje. *Teoría de la Educación*, 14, 67-92.

Gros, B. (2002). Burrhus Frederic Skinner y la tecnología en la enseñanza. In J. Trilla (coord.), *El legado pedagógico del siglo XX para la escuela del siglo XXI* (pp. 229-248). Barcelona: Graó.

Khalil, H. & Ebner, M. (2013). How satisfied are you with your MOOC? - A Research Study on Interaction in Huge Online Courses. In J. Herrington et al. (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications* (pp. 830-839). Chesapeake, VA: AACE.

Kizilcec, R. F., Piech, C. & Schneider, E. (2013). *Deconstructing Disengagement: Analyzing Learner Subpopulations in Massive Open Online Courses*. Stanford University Paper Series. Retrieved 18 June, 2013, from http://www.stanford.edu/~cpiech/bio/papers/deconstructingDisengagement.pdf.

Kohler, F., Jay, N., Ducreau, F., Casanova, G., Kohler, Ch., Benhamou, A.C. (2013). *COURLIS (COURs en LIgne de Statistiques appliquées) Un MOOC francophone innovant.* Retrieved 30 July, 2014, from http://documents.irevues.inist.fr/bitstream/handle/2042/49205/HEGEL_2013_3_1-27.pdf?sequence=1.

Kop R. & Hill A. (2008). Connectivism: Learning theory of the future or vestige of the past? *The International Review of Research in Open and Distance Learning.* 9(3), Retrieved 13 June, 2013, from http://www.irrodl.org/index.php/irrodl/article/view/523/1103.

Kop, R. (2011). The challenges to connectivist learning on open online networks: Learning experiences during a massive open online course. *International Review of Research in Open and Distance Learning*. 12(3). Retrieved 20 June, 2013, from http://www.irrodl.org/index.php/irrodl/article/view/882.

Krichen, J.P. (2007). Investigating learning styles in the online educational environment. Paper presented at the Conference on Information Techonology Education (CITC). In Sweeney,B., Feintein, D.L. & Ekstrom, J.J. (Eds.) *Proceedings of the 8th ACM SIGITE conference on Information technology education* (pp.127-134). ACM: Association for Computing Machonery.

Mak, S., Williams, R. and Mackness, J. (2010). Blogs and forums as communication and learning tools in a MOOC. In: *Proceedings of the 7th International Conference on Networked Learning 2010*. University of Lancaster, Lancaster, pp. 275-285.

McAuley, A., Stewart, B., Siemens, G. & Cormier, D. (2010). The MOOC Model for Digital Practice: Massive Open Online Courses. Digital ways of knowing and learning. University of Prince Edward Island. Retrieved 6 November, 2013, from https://oerknowledgecloud.org/sites/oerknowledgecloud.org/files/MOOC_Final_0.pdf.

Norvig, P. (2012). Peter Norvig: The 100,000–student classroom. Retrieved 19 December, 2014, from http://www.ted.com/talks/peter_norvig_the_100_000_student_classroom.html.

Parr, C. (2013). Not Staying the Course. *Times Higher Education*, May 10, retrieved 20 October, 2014, from http://www.insidehighered.com/news/2013/05/10/new-study-low-Mooc-completion-rates.

Prensky, M. (2010). *Teaching Digital Natives*.Thousand Oaks (Cal.): Corwin Press

Salmon, G. (2002). *E-tivities: The key to active online learning*. London: Kogan Page Ltd.

Teplechuk, E. (2013). *Emergent models of Massive Open Online Courses: an exploration of sustainable practices for MOOC institutions in the context of the launch of MOOCs at the University of Edinburgh*. Dissertation Presented for the Degree of MBA. University of Edinburgh. Retrieved 3 May, 2013, from http://www.era.lib.ed.ac.uk/bitstream/1842/7536/1/MOOCs_MBADissertationTeplechuk_Master.pdf.

Figures

Table 1. Major international MOOC Platforms (compiled from sampling date December 2014).

MOOC Platform	URL	Courses number	Country
OpenCourseWare	http://www.ocwconsortium.org/	26,253	USA
OpenLearn	http://www.open.edu/openlearn/	7,394	UK
Coursera	https://www.coursera.org/	1,063	USA
OpenLearning	https://www.openlearning.com/	630	AUS
Alison	http://alison.com/	616	IRE
Udemy	http://www.udemy.com/	549	USA
P2PU	https://p2pu.org/es/	458	USA
GCF Learn Free	http://www.gcflearnfree.org/	331	USA
EdX	https://www.edx.org/	317	USA
Saylor.org	http://www.saylor.org/	300	USA
MiriadaX	http://miriadax.net/	189	ES
Google Course Builder	http://code.google.com/p/course-builder/	102	USA
Canvas	https://www.canvas.net/	77	USA
University of the People	http://www.uopeople.org/	64	USA
Udacity	http://www.udacity.com/	55	USA
Venturelab	http://venturelab.stanford.edu/	52	USA
Coursesites	https://www.coursesites.com	46	USA
Open Yale Courses	http://oyc.yale.edu/	41	USA
Open Learning Initiative-CMU	http://oli.cmu.edu/	29	USA

Table 2. MOOC platforms by provider (compiled from sampling date in October 2013).

Organizations by platform providers	Europe/Middle East	North America	Asia/Australia
CanvasNet	--	10	--
Coursera	28	43	10
CourseSites	5	18	1
EdX	5	13	7
FutureLearn	23	--	2
Open2Study	--	--	8
OpenupEd	10	--	--

Note: Adapted from EduTechnica http://edutechnica.com/moocmap/#