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## THE GOOD, THE BAD, AND THE UGLY MOOC

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### Abstract

Students and Higher Education Institutions have adopted different learning management systems, e-learning platforms and massive open online courses (MOOCs). These provide different benefits for, both, the students and the educational institutions. But at the same time, they also have significant drawbacks. This paper discusses these drawbacks from the educational as well as the social innovation perspective. In our opinion, change in the traditional focus, usually applied for addressing these issues, introduces new approaches that can provide the desired outcomes of using e-learning platforms and MOOCs.

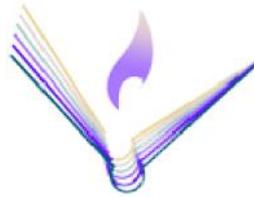
### Introduction

There is a constant urge in the educational community to promote new technologies that will add additional value to education (Pappano, 2012). The main benefit of using distance learning educational systems and different learning management systems is enabling teachers and students to be virtually "present" in an environment that they cannot physically reach because of lack of different resources (time, money, people) (Breslow, 2013). We consider this function as "the good" function of such learning environments.

Educational institutions usually invest in the establishment of such challenging learning environments themselves. Thus, the learning environment functional requirements focus on administrative, infrastructural and educational needs. Educational requirements are defined by different educational paradigms and learning strategies that should be supported by the learning environment. However, these requirements are constrained by the administrative and technical (infrastructural) requirements. The administrative requirements deal with: procedures that need to be fulfilled for any number of students assigned to a certain course, support of establishing necessary quality of education (educational results) requested by national accreditation agencies, different types of financial reporting, etc. The infrastructural requirements, on the other hand, deal with Quality of Service (QoS) control needed for ensuring the availability and quality of the provided service. As a result, the educational platforms are unable to satisfy the Quality of Experience (QoE) parameters for their end users (students and instructors). We consider this as "the bad" effect of these learning environments.

The case of Higher Educational Institutions adopting these kinds of learning environments is even more intriguing. The most typical example is a MOOCs based learning environment. It provides ways to globalize the educational process by enrolling an enormous number of international students per class. The learning environments based on MOOCs tend to ignore the primary function of higher education: to create input suitable for labour market (Kivinen, 2014) (Mavromaras, 2013). They also lack of incorporated grading system for the quality, accuracy, even validity of the different materials offered by various lecturers. This is very difficult to achieve, taking into account the countries enrolled students come from and the needs of the corresponding local and global markets. In our opinion, this is "the ugly" effect of MOOCs based learning environments.

Although the cost of course per student in MOOCs based learning environments is very low, the large number of students creates a relevant (if not significant) total cost of the course. In addition, the high drop out rate (often up to 90%) creates unnecessary administrative workload from the point of view of educational institutions. For these reasons, educational institutions that carry out MOOC related courses are investigating ways to support their efforts by providing better financial sustainability for their MOOC (Seaton, 2014).



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The main goal of this paper is to propose a way to provide financial sustainability of MOOC learning environments by introducing higher QoE for end users and involving different stakeholders in the educational process. The proposed approach can be used with most of the existing MOOC popular learning environments.

The next section of the paper explains the QoE parameters used in an educational environment in more details. The third section elaborates the need for introducing more stakeholders in the MOOCs based learning environments, while section four concludes the paper.

### **QoE aware Learning Environments**

The variety of locations, combinations of students that can possibly participate in the same class while having different cultural and educational background, as well as the possibility to engage foreign lectures, implies a need for carefully structured QoE parameters for massive online open learning environments. The learning environmentability to adapt to the learning preferences of every individual student, leads to improved QoE (Cuellar, 2011).

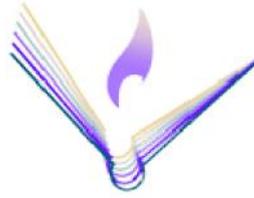
The acceptance level of the educational environment for the majority of students impacts the overall success of the educational environment. There are many experiences of using popular social networks as learning environments in order to ensure this effect (Wang, 2012).

Different methodologies of presenting the lectures to the students can be envisioned. Presently, in the most popular distance-learning environments, MOOC, one scenario is dominant: pre-recorded lecture streaming supported by available on-line learning materials and on-line testing. The pre-recorded lecture streaming is very simple from educational methodological point of view. The lecturer is asked to record her/himself, and then, this recorded lecture is made available to the students. It is important to emphasize that this is the most suitable way for making additions to the existing educational materials with new findings, due to the possibility of giving the lecturer freedom to express, and the very short interval from recording to making the material available to the students. In addition, this scenario enables recorded sessions to be available to students in the next years to come.

However, this approach lacks interaction, and thus, we propose combining it with, video conferencing consultations on certain topics chosen by the lectures, that can be moderated in a non-formal or formal way. The video conferencing sessions are very complex in their nature since they need to establish similar background knowledge among students. In order to make sure of their success, the pre-video conferencing phase and the post-video conferencing phase need to be introduced. In the pre-video conferencing phase, background reading and information about the lecture is made available to the students using different web enabled channels (web pages, forums, social networks). In this way, the lecturer can gain valuable information from the student's feedback about issues that should be clarified and approaches that can be used during the live video session. The post-video conferencing phase provides students with a way to give valuable feedback on both lesson topic, and technical infrastructure interfering with the educational methodology by using different types of e-feedback (surveys, e-tests, forums).

The benefits of this upgrade of the learning methodology used by MOOC are obvious:

- Delivery of dynamic educational services and presentation of the educational material are done according to the identified student preferences for achieving increased QoE,
- Basic identification and classification of student preferences is performed, thus enabling prediction of the future student behaviour.



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These benefits enable further improvement of the educational environment such are:

- Dynamic measurement of student's knowledge and adapting content delivery to the learning user and other higher-level needs,
- Possibility of establishing different motivational enablers (e.g. gamification) (Betts, 2013).

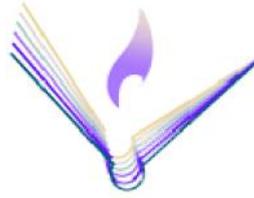
The assessment of student's achieved results is crucial for the labor market. The assessment of the students should provide a set of qualified information about the cognitive and meta-cognitive level of the students, thus aiding to the proper choice of different pedagogical approaches in order to optimize the Quality of Learning (QoL) (Peacher, 2010). We propose a standard statistical model for analysis and assessment of the final scores of the students participating in MOOC. The aim of this analysis is to provide an objective estimation on the advantages or disadvantages of the pedagogical approach on each assessed student. The difference of this model with the model adopted by most MOOCs based learning environment is obvious: the knowledge level obtained there is only one out of five components. The main assessment objectives we propose are summarized in the table 1:

Table1: Assessment objectives, instruments and metrics in a MOOC learning environment

| # | Assessment Objective   | Assessment instruments in Distance Education                         | Metrics  |
|---|--|--|--|
| 1 | Verify the participation level and degree of interaction among participants              | Discussion Forum / Chat /Statistics                                  | Total number of interactions computed from the messages posted in forums; Number of people interacted with, Student access by executed actions     |
| 2 | Verify the capability of "asynchronous" and "synchronous" elaboration of the participant | Discussion Forum; Off-Line Activities (Essays and Written Questions) | Similarity Index between the Issued Answer and the Expected Standard Answer quantified, for example, by keywords in the solution                   |
| 3 | Verify student knowledge level about a given topic                                       | E-test   | Similarity Index between the Issued Answer and the Expected Standard Answer  |
| 4 | Identify student confidence level about his/her own knowledge before studying a topic    | Self-Assessment (Diagnostic)   | Confidence Level stated in an increasing scale where the larger values indicate greater degree of confidence to be later compared with performance |
| 5 | Indicate the Knowledge Acquisition Level of the Student                                  | Grades Board   | Metrics that summarizes the student performance indicating student cognitive and meta-cognitive profiles   |

The proposed assessment metrics, together with the proposed update of the educational methodology imply the need for direct contact between the instructor and small group of students participating in MOOC learning environment. This will improve both QoE and QoL, but will significantly increase the cost of establishing such a learning environment since it will require additional resources (instructors and time).

We will address these issues by using a standard social innovation paradigm technique in the next session.



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## **Social Innovation and MOOC**

Social innovations are strategies, concepts and ideas that meet social needs of all kinds (Young, 2011). One of the most important social needs is the one for education. Social innovation includes the social processes of innovation. Such process can be established only if it is self-sustainable in practise. The social innovation process will induce the cost, but parties that have certain interest in establishing social innovation can cover that cost (Maclea, 2013).

Companies that develop their business model around technology are affected by globalization in terms of innovation and pressure of competition (Onneti, 2010). They need to find a proactive way to respond to the needs of the global markets. This includes close relationships with the educational institutions in terms of: selection of suitable future employees ready to work in a global working environment, and possibility to influence the educational curricula in higher education institutions in order to better match their needs. These companies are ready to invest in this process, especially by making their staff available for the student's internships or common projects with the academia.

Companies are ready to spend some of their resources (staff and time) to establish close connections with students that have interest in specific areas and are good with the use of technology. MOOCs based learning environments usually cover wide area of educational topics, and attract students that have no problem to interact with technology. This provides a possibility to use MOOC as a tool that will provide companies with direct links to students on one side, and students with increased number of specialised instructors on other side. Taking into account the relationship between companies and higher education institutions, this will provide the companies with more influence on the learning topics and the curricula, while the universities will have a solution for providing sustainability for the MOOCs based learning environment. The companies will not only reduce the costs related to the maintenance of the MOOC, but must also pay a certain participation fee.

In this way, by providing more personalised learning paths, we will be able to increase the quality of individual student education. The overall quality of the educational process offered by MOOCs based learning environments will also be increased by making the education closely matched to the global labour market (Bardhan, 2013).

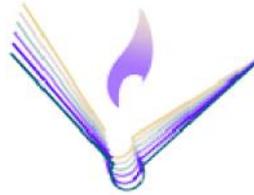
Existing MOOCs based learning environments have to find a way to incorporate companies in the learning process. This can be done by providing interfaces to their human resources and/or internal training systems.

## **Conclusion**

Higher Education Institutions have adopted different MOOCs based learning environments. Their functional requirements focus on administrative and infrastructure needs that limit the possible educational requirements that can be fulfilled. As a result, MOOCs based educational platforms lack in satisfying the QoE parameters for their students and instructors. The learning environments based on MOOCs fail to create high-demand skills suitable for the job markets that the enrolled students came from. This is due to lack of information and context for the different labour markets.

We propose a more interactive MOOCs based learning environments that focus on personalised learning paths for students and student assessment that is more detailed while less stressful. We believe that in this way, we can achieve increased QoE and QoL adopted for different kinds of labour markets. In order to decrease the cost of the increased workload with students, we propose an introduction of the companies that create their business model based on technology, as stakeholders in the MOOCs based educational process.

In a way, this approach combines the best of the following paradigms: student adopted social networks (facebook, twitter, youtube), massive on-line games, learning management systems, and industry related social networks (linkedin).



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