

Chapter 9

M100S Project: Math MOOCs From Polytechnic of Porto – Development, Continuance, and Use

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ABSTRACT

This chapter presents the M100S project, a math MOOC platform from the e-learning unit of the Polytechnic of Porto (P.PORTO). Reference is made to all motivational, structural, and fundamental steps of this process of creation and development, from its origin to the present day, and a brief analysis of the advantages and disadvantages of these recent educational resources. The general structure adopted for these mathematics MOOCs is presented, with all its features, and the difficulties inherent to the development of these courses from scratch are analyzed, both regarding the technological and financial support available as well as the human resources enrolled. Finally, several internal practices and applications made by means of the most varied open resources, specifically developed for these MOOCs and other existing ones from the MatActiva project, in Portuguese, both in a b-learning perspective and in the development of flipped teaching strategies, are mentioned.

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INTRODUCTION

All around the world, Higher Education Institutions (HEI), particularly those in which Mathematics is a necessary pre-requisite for several of their courses, must deal and try to tackle what seems to be an “universal” problem - the difference between the “levels of mathematics knowledge and skills” of their incoming students. HEI have made several attempts to overcome this issue like offering intensive courses before the first year in higher education (usually named as Mathematics Zero or Pre-Calculus courses) as well as many other “remedial” measures. Watching the remarkable success of Massive Open Online Courses (MOOC) and having to deal with this “problem” in a daily basis, one sensed that students, as well as instructors, could only benefit from this new “educational paradigm” to, sustainably, take advantage of the existing opportunities to “freely” learn Mathematics online.

In the autumn of 2013, the Polytechnic of Porto (P.PORTO) launched its own MOOC platform – OpenED which “opened the door” to the development of open courses and projects, like “Math Without STRESS” (or in its original version – in Portuguese – Matemática 100 STRESS – M100S) – a global P.PORTO Math platform that is operating since 2015, in its actual format.

The main purpose of this chapter is to take this opportunity to join, consolidate, encompass and describe a complete review of all the steps, procedures, motivations, team effort and work, as well as some potential uses and synergies. In this sense, the main objectives of this chapter are the description of the P.Porto M100S Project and its entire development process, ending with a description of all its potential in terms of contents effective use as well as of others to be developed.

BACKGROUND

Given the context in which this chapter is, it would not be sensible to overstate the bibliographical and even historical review. Thus, a brief historical contextualization is carried out, followed by the global and general contextualization of the project.

In September of 2008, George Siemens (Athabasca University), Stephen Downes (National Research Council) and Dave Cormier (University of Prince Edward Island) created an open course called Connectivism and Connective Knowledge, also known as CCK08 (Cano, E. V., Meneses, E. L., & Sánchez-Serrano, J. L. S., 2013). This seems to be the first course to incorporate open learning with distributed content, making it the first true MOOC. From this point to current times much has been written about MOOCs (a quick search at b-on, for example, gives almost 16 000 results). Still growing and, somehow, operating “in the shadow”, MOOC seem to be carrying out an “open moving wave” in education. 2012 is often mentioned as ‘the

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