

# Benefit and Cost Analysis of Massive Open Online Courses: Pedagogical Implications on Higher Education

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## ABSTRACT

*There has been much research done on online learning including research on online educational activities and methods. The use of technology is gaining rising importance in higher education due to the benefits that it brings. In terms of adopting new technologies to teaching, new forms of teaching, such as massive open online courses (MOOCs), are increasingly seen as a feasible future form of learning. The importance of MOOCs in higher education has caused debates in the computing education research. This study aims to provide an in-depth analysis of the pedagogical implications of MOOCs to higher education. Research in MOOCs is of vital importance because these courses may offer meaningful learning opportunities for those otherwise impossible through means of distance learning. The concepts of e-learning, online learning and distance learning have been previously addressed where previous research has indicated that the integration of online technologies to higher education do not automatically support learning. Many education institutions still question the sustainability of courses using extensive online technologies in higher education. The authors open up new research opportunities in a student-centered design in MOOCs incorporating a personalized learning environment to online education.*

*Keywords:* Cost Analysis, Education, Massive Open Online Course (MOOC), Technology

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## 1. INTRODUCTION

The use of technology is gaining rising importance in higher education due to the benefits that it brings (Kay and Lauricella, 2011; Xia, 2013). In terms of adopting new technologies to teaching, Glance et al. (2013) have raised the importance of massive open online course in higher education. By massive open online courses (MOOC), we refer to courses that are organized in an online and open access allowing massive participation. The lectures in MOOCs may include for example the following elements: short videos combined with formative quizzes, automatic and online assessment, peer review and group discussions.

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This study aims to open up new insights on the subject matter and provide an in-depth analysis of some of the benefits and the challenges of massive open online courses in higher education. Research in MOOCs is of vital importance because these courses may offer meaningful learning opportunities for those otherwise impossible through means of distance learning. Given the benefits of MOOC, its adoption in higher education has received a growing attention. As its name suggests, massive open online courses offer unlimited participation and open access in a web-based learning environment. Compared to the ordinary online courses, MOOCs put a stronger emphasis on open access features including but is not limited to open licensing of content. Specifically, McAuley, et al. (2010) have defined massive open online course to be an online phenomenon integrating the connectivity of social networking under the facilitation of an acknowledged expert in a field of study via a collection of freely accessible online resources. Here, the role of the acknowledged expert is to prioritize important ideas and concepts; organizing resources to help student understanding; assist participants to use social networking, clarify discussions and demonstrate successful engagement patterns as well as supervising the whole learning process. (Rodriguez, 2014)

Given that MOOCs allow massive participation due to their online and open accessibility, massive open online courses can be used in open education by definition so that the students' background does not affect the possibility to participate in these courses. MOOC might also be a good option for students who desire alternative learning environments than the traditional class-room setting. This is because in lectures conducted in MOOCs, students get to, for example, self-organize their participation according to their learning goals, common interests as well as prior knowledge and skills, and thus take more responsibilities for their studies compared to learning in a traditional classroom learning environment. (Glance et al. (2013) Given that massive open online courses provide easy access to the course participants, due to the large amount of participation, course participation, online assignments, giving feedback to the students and grading of the exams are often conducted via automatic monitoring and assessment. In addition to these online technologies used in MOOC, massive open online courses also tend to make use of the social media in teaching as well as mobile technologies in supporting student learning.

The concepts of e-learning, online learning and distance learning have been previously addressed in computing education research where research has brought both the benefits and the challenges of using online technologies in higher education (Fini, 2009). While some researchers, such as Glance et al. (2013) and Smith et al (2009), have indicated that the potential of using web-based technologies in teaching may be currently under-actualized, some researchers, such as Kop (2011) and Chatti et al. (2010), have also indicated that the integration of online technologies to higher education do not automatically support learning. As a matter of fact, despite the popularity of massive open online courses in research, some of the problems of MOOCs are the course completion rates, which might be the result from a poor level of interaction between the teacher and the students. In a few of the examples of MOOCs conducted in large universities, the course completion rates resulted in as low as 10%. (Kizilcec et al., 2013) For this reason, MOOCs may be unsuitable for substituting traditional classroom courses in higher education. We will elaborate more on some of the benefits as well as challenges associated with online learning together with some propositions on the aspects of teaching in the subsequent sections.

This paper proceeds as follows. We will next introduce some of the benefits of Massive Open Online Courses based on the previous literature. Then, we will shortly discuss some of the challenges of MOOCs in higher education. In response to these challenges, we will draw on pedagogical implications of MOOCs to higher education. Finally, we will conclude this study in the Summary and Conclusion section of this study.

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