The hype of MOOCs

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Introduction

Initiated in the U.S.A. in 2008, one can say that the MOOCs (Massive Open Online Courses) movement has recently become hype in the international HE (Higher Education) space. The New York Times even declared 2012 to be “the year of the MOOC” [1]. The movement has quickly grown and expanded in the U.S.A., especially since the establishment of the so-called MOOCs platforms. In the autumn of 2011, as many as 160,000 students in 190 countries signed up for a Stanford MOOC ‘Introduction to Artificial Intelligence’ [2]. This led to the foundation of the platform Udacity, followed in 2013 by Courseware and edX. These companies form partnerships with top universities and organizations with a view to offering courses online for anyone to take free of charge. In July 2015, the number of edX MOOCs stood at 575 [3].

In 2013, the Open University in the U.K. built its own platform Futurelearn, and the MOOCs movement has evolved substantially in Europe in the last few years, especially since the launch in April 2013 of OpenupEd as a pan-European initiative around MOOCs co-ordinated by the EADTU (European Association of Distance Teaching Universities). As a result, there has been a mushrooming of MOOCs in Europe, illustrated by the fact that, at the beginning of May 2015, the European MOOCs scoreboard stood at 2009 [4], but also by the many recent meetings and conferences devoted to open and flexible HE wherein MOOCs received substantial attention, such as the EADTU Open and Flexible Higher Education Conference on ‘New Technologies and the Future of Teaching and Learning’ in Krakow, October 2014, and the conference on ‘Mapping the European MOOC Territory’ that resulted in the Porto Declaration on European MOOCs in Porto, November 2014 [5]. In February 2015 a state-of-the-art of the situation in Europe, resulting from the European Union-funded EADTU project HOME, was reported entitled Institutional MOOC Strategies in Europe: Status Report Based on a Mapping Survey Conducted in October–December 2014 [6]. The topicality and importance of the development and application of open and flexible digital learning and teaching methods is also shown by the publication in October 2014 of the report of the European Union’s High-Level Group on the
MOOCs can be seen as the latest sophisticated development in educational technology using electronic media and ICT (information and communications technology) to create VLEs (virtual learning environments). And one should not be surprised to encounter a quotation that sounds as follows:

“The central and dominant aim of education by ICT is to bring the world to the classroom, to make universally available the services of the finest teacher, the inspiration of the greatest leaders.”

Interestingly, if we replace ‘ICT’ by ‘radio’, the above is a real quotation from a 1932 book entitled *Radio: the Assistant Teacher* by Benjamin Darrow ([8], p. 79), the founder of the Ohio School of the Air and tireless promoter of radio in classrooms. As shown in the book by Larry Cuban [9] *Teachers and Machines: the Classroom Use of Technology since 1920*, those expectations have materialized neither for the radio nor for its successors such as programmed instruction and school television. And the same even holds true so far for the introduction of the computer since the early 1980s.

It is thus interesting to ask the question whether the latest developments in the use of ICT for education will fundamentally change and improve education, and especially how it will have an impact on policies and practices of learning and teaching in European HE. Accordingly, the HERCulES (Higher Education, Research and Culture in European Society) expert group of the Academia Europaea found it appropriate to arrange a symposium on the current situation as well as on future perspectives of open and flexible HE in Europe. However, although the symposium had a focus on MOOCs, the idea was also to use the MOOCs movement as a starting point for addressing and reflecting on the broader topic stated in the main symposium title ‘Emerging models of learning and teaching in higher education’, thereby paying attention to recent developments in open and flexible approaches to learning and teaching, such as e-learning, blended learning and OER (open educational resources).

**Defining MOOCs and other e-learning approaches**

Broadly defined, e-learning refers to the use of electronic media and ICT in education to create VLEs involving a blend of classroom and online teaching. But e-learning has more and more become associated with online learning, i.e. forms and activities of learning based on the use of computer networks for interactive distribution of, and communication over, knowledge and skills. E-learning is considered an appropriate way for distance learning, and has skyrocketed over the last few decades by the advent of the so-called OER. These are digital learning tools that are “offered freely and openly for educators, students, and self-learners to use and re-use for teaching, learning, and research” [10]. This movement originated in the late 1990s with the first major initiative coming from MIT (Massachusetts Institute of Technology). In 2002, MIT released 50 freely available courses through the Open Course-Ware initiative. OER are considered a vehicle towards more open and flexible HE that lead to the emergence and fast development and distribution of the MOOCs referred to above. In contrast with
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The OER, MOOCs not only disseminate content knowledge, but also involve a pedagogical component, and thus aim at creating a real learning environment. MOOCs expand access to content to an educational experience through digital learning platforms [11]. Although the latter applies in principle for all MOOCs, it has to be admitted that today “MOOCs remain relatively poorly defined” ([6], p. 3); even the four words ‘massive’, ‘open’, ‘online’ and ‘course’ are interpreted differently [6,12]. The following definition shared by many European partners in the MOOCs movement can be seen as a common denominator ([6], p. 13):

“Online courses designed for large numbers of participants, that can be accessed by anyone anywhere as long as they have an internet connection, are open to everyone without entry qualifications, and offer a full/complete course experience for free.”

MOOCs and the future of universities

As already shown above, the MOOCs hype has, over the last few years, received a lot of interest and attention, and even great enthusiasm, not only in the perspective of improving and innovating HE, but also in view of ‘educating the world’. For instance, edX president Anant Argawal promised in 2013 to “make education borderless, gender-blind, race-blind, class-blind and bank-account-blind” [13]. With respect to HEIs (higher education institutions), Robert Stouthuysen (Honorary Chairman of the Flanders’ Chamber of Commerce and Industry and of Janssen Pharmaceutica, a company known worldwide) claimed in an article published in the Flemish quality newspaper De Standaard that “higher education will be digital or will not be”, and added “the classic university is at the point of death” [14].

However, the latter kind of utopian statement can be questioned with reference to its neglect of the human factor. It should be noted that universities are not only sites of learning, but also significant institutions for screening and socialization in modern society. In this way, they bring together selected persons in future networks as well as provide important information to prospective employers in their selection of employees. The reputation of academic institutions, through the success of their earlier graduates in the labour market, has thereby appeared particularly significant. Highly reputed degree-awarding institutions should therefore be expected to have a future. At the same time, the ICT offers great opportunities for all educational institutions as a complement in education rather than a dangerous competitor [15].

The above, less spectacular but probably more realistic, perspective provides a good starting point for further discussion and reflection on the potential of ICT, including the MOOCs, for HE. In this respect, it is important to take into account the great challenges that HEIs are facing, such as:

(i) The increasing and more heterogeneous student population that enters universities
(ii) The globalization of HE leading to more and more mobility of students, teachers and researchers
(iii) The demands for improving the quality of HE, taking into account emerging novel ideas and models of effective learning that stress the importance of more active and collaborative learning

(iv) The urgent need for graduates who are prepared for lifelong self-regulated learning [11].

It is obvious that responding to these challenges requires a serious rethinking and innovation of the still prevailing traditional approaches to learning and teaching in universities. It is true that here and there often small-scale initiatives for change have got off to a good start, but there is a need in the near future for a more massive large-scale innovation of HE to meet the demands of our rapidly changing knowledge society. There is no doubt that educational technology can make a substantial contribution in this regard, but it is of utmost importance that ICT applications are education-driven and not technology-driven. Digital learning is a tool and not a goal in itself. To integrate ICT appropriately in universities, it is therefore necessary to elaborate a future-oriented vision at different policy levels: the authorities, the institutions, including the teachers, and the students.

Promises and limitations of MOOCs

Against the above background, it is interesting to look at the current situation of the MOOCs movement: what are the important promises in view of addressing the challenges of HE, and what are the major limitations of the MOOCs?

Promises of MOOCs

With respect to the promises, it has been argued that MOOCs can promote the democratization of HE by providing free open access to knowledge and teaching. Students have the possibility to access the study material repeatedly at any time and any location. MOOCs have also the potential for transforming teaching and learning models, for instance, by giving a stronger focus on active learning by the students instead of teaching, and more accent on pedagogy besides content knowledge; all this can result in a new role for the teacher. MOOCs can also facilitate collaborative learning among students, and can and should foster the design of new forms of assessment and certification. They can easily lead to the development and use of blended models of learning, consisting of a well-thought out mixture of online and classroom face-to-face teaching and learning activities. Collaborative projects and activities among institutions of HE have already been started (see, e.g. [16]). MOOCs also provide interesting perspectives for use in professional development [17]. An important side effect of the MOOCs movement is that it induces in HE institutions more attention for and concern about teaching and learning, and can incite teachers to reflect on the content of their courses and the quality of their teaching.

Limitations of MOOCs

Besides possible benefits, criticisms and limitations have also been raised. A major problem of MOOCs are the very high drop-out rates, up to 90%, often because
of lack of incentive, failure to understand the content material, having nobody to talk to and having other priorities to fulfil [18]. MOOCs attract more advantaged students, and more students from non-formal than formal education [17]; currently, the interest for MOOCs in traditional universities is at the most modest, and often even low. So far, rigorous student assessment is often problematic. And a major problem is, as also stated by Diana Laurillard in Chapter 1 [17], that the educational and pedagogical quality of many MOOCs is very weak; they are based on a traditional model of education. As argued by Brian Fleming [19]:

“MOOCs, on the other hand, are shockingly austere, relying heavily on lectures, multiple choice exams, and threaded discussions with little sustained faculty involvement or guidance for learning.”

Also, although as mentioned above, one promise is that MOOCs can facilitate collaborative learning, most of them do not support such collaboration [17,18,20]. More generally, notwithstanding claims of diversity and innovation, MOOCs involve the risk of increasing standardization, homogenization, and uniformity of knowledge and curricula in HE [21]. All this gives, of course, ammunition to those who claim that MOOCs offer a watered-down education. An additional problem is that, currently, there are no clear business models for MOOCs. As pointed out by Michael Cusumano in Chapter 9 of this volume [22], MOOCs have so far not been contributing much to the revenues of institutions of HE. As a matter of fact, it appears that the free education for everybody can presently only be afforded by the wealthy elite universities. This in turn may have the unfortunate effect that local community colleges, quite in contrast with the high ideals of MOOCs, will be outcompeted.

**Research results on MOOCs**

As far as research is concerned, Elizabeth Losh argues in her 2014 book *The War on Learning: Gaining Ground in the Digital University* ([2], p. 127):

“Yet there has been surprisingly little empirical study of student experience in MOOC education and a paucity of independent research in general.”

However, in 2014, a review of the published literature by Hew and Cheung [18] focused on the use of MOOCs by teachers and students. All studies involved in the review relied on self-reported data. The number of participants was one per study for the instructors, and varied from mostly one up to 7,161 for the students. For the latter, Hew and Cheung identified four motivations to sign up for MOOCs:

(i) Interest in learning about a new topic or in extending one’s knowledge
(ii) Curiosity about MOOCs
(iii) Personal challenge
(iv) Collecting as many completion certificates as possible.

Their review confirms the 90% drop-out mentioned above.

Three reasons were found for instructors wanting to teach MOOCs:
(i) Motivated by a sense of intrigue
(ii) Gaining some personal rewards
(iii) A sense of altruism (increasing the welfare of others).

The study also revealed four major challenges:

(i) Difficulties in evaluating students’ work
(ii) Experiencing a sense of speaking in a vacuum due to the lack of immediate feedback
(iii) Burden by heavy demands of time and money
(iv) Lack of student participation in online forums.

The authors conclude by discussing two very important unresolved issues that are lacking in the available investigations, namely the quality of MOOC education and the assessment of student work.

Referring also to the above statement by Elizabeth Losh, there is thus an urgent need for high-quality peer-reviewed research about MOOC education. Such enquiry is the more important because, as already mentioned above, there are signs of reluctance towards MOOCs on the side of the traditional colleges and universities. It is in this respect well known from experience as well as from research that resistance to change is a major characteristic of educational institutions [23]. There are at least two additional issues for research and development: (i) the elaboration of an implementation strategy for the appropriate ICT integration, and (ii) the professional development of teachers.

The topics touched on above as well as others are discussed in the following chapters of this volume. One could certainly not expect that the symposium would present recipes for the future of MOOCs and its problems. It is true however that differences of vision and perspectives have become manifest during the symposium. But there is certainly general agreement that MOOCs will have an impact on the future of HE. For example, one likely trend might be the development of hybrid models combining online learning with classroom teaching, such as the flipped classroom model described by Karlsson and Janson in Chapter 11 of this volume [24]. But, under the current circumstances, it is hard to foresee what the results will be. But one very positive outcome of the MOOCs movement is certainly that it has brought on discussion and reflection about new avenues for learning and teaching in HE. Seymour Papert’s 1984 idea that the computer will blow up the school [25] will not materialize, but, as a consequence of the discussions that MOOCs has initiated and animated, it is for sure that the classroom will never be the same as it has been before. The road is still long, but the chapters in this volume can help to make a small step in the right direction.

Overview of the volume

The volume consists of five parts. In Part I, the four chapters focus on MOOCs, teachers and students. In Chapter 1, Diana Laurillard addresses the crucial questions that currently confront teachers at the university: how should professors...
adapt to the changing digital education environment? Indeed, this new environment calls for pedagogical innovation in response to the rapid economic, social, cultural and technological changes in society. The needed innovation in HE can and should benefit from the recent developments in educational technology in general and of the MOOCs movement in particular. Taking a critical stance towards the current situation of the MOOCs as being mostly technologically driven and pedagogically deficient, she proposes one direction for the efficient and valuable use of MOOCs as tools for the professional development of teachers, especially in the perspective of the enormous growing global need for qualified teachers in the coming years, starting from the view of teaching as a science of design [26].

Pierre Dillenbourg, Nan Li and Łukasz Kidziński focus in Chapter 2 on the timing of learning activities. After stressing and illustrating the importance of time as an instructional variable in any educational situation, they discuss in detail time issues in MOOCs, arguing that MOOCs have introduced innovative ways to manage time, and this is related to the fact that different time structures in MOOCs have affordances and constraints. In this respect, the authors provide empirical results from studies of student behaviour illustrating particular problems in MOOCs education. They also present a formal model for the analysis of synchronization of student learning over time.

With reference to studies of media coverage, Mark Brown demonstrates in Chapter 3 the multitude of images that are associated with MOOCs. This state of affairs, he suggests, can best be analysed by means of a kaleidoscope metaphor using two competing lenses: the ‘Knowledge Economy’ and the ‘Learning Society’. Brown argues that the first of these is associated with reproducing, i.e. mass education, quality standards, education as commodity and increased market competition. At the same time, the Knowledge Economy is also characterized by reschooling, i.e. monolinguis, learning for all, a global curriculum and education in change. The Learning Society, on the other hand, implies deschooling, a democratic process with open access, learning webs and unbundling learning, but also reconceptualizing, i.e. diversity, a just society, wicked problems and education for change. This mixture of views on MOOCs, Brown argues, is a result of the various interests of stakeholders and is a part of political and economic processes.

Gerhard Fischer discusses the role of MOOCs as components of rich landscapes of learning in Chapter 4. In so doing, his point of departure is the importance to distinguish on the one hand between ‘learning about’ and ‘learning to be’, and on the other ‘learning when the answer is known’ and ‘learning when the answer is not known’. His conclusion is that, in terms of the first distinction, MOOCs can be useful for ‘learning about’, whereas universities will maintain their position in terms of ‘learning to be’. However, as far as the second distinction is concerned, MOOCs can have certain advantages in answering problems with unknown answers through the interaction among participants in network exchange. Fischer also provides a discussion of a research agenda for learning in the digital age. He concludes that MOOCs have been important to stimulate a broad discourse in the media, in universities and among politicians about learning, teaching and education.

In Part II, four chapters review and discuss research on MOOCs and future perspectives. In Chapter 5, Lori Breslow reviews a major part of the
available investigations in the period 2012–2014, based mainly on a search on the MOOC Research Browser and Google Scholar. Thereby, the studies are clustered in three categories: (i) who are the students?, (ii) why and how do students persist?, and (iii) pedagogical methods to increase students’ persistence and engagement (particularly on discussion forums). The chapter stresses the importance for the research of collaboration between domain specialists and programmers/developers who have the expertise to create tools on the platforms. The reason is that recent research has shown that the educational quality of MOOCs is still quite low. A look into the future of MOOCs research concludes the chapter.

Research into the learners who study on MOOCs addresses mainly two questions: who study on MOOCs? And what do MOOC learners actually do in a course? Chapter 6 by Jeff Haywood focuses on research conducted at the University of Edinburgh on the first question, using surveys gathering data on such issues as demographics (age, gender, geographical location and educational level), reasons for studying MOOCs, and intended and actual achievement on MOOCs. A major finding is that, with respect to these measured features, there is large variety among MOOCs. Against this background, the chapter looks forward to important strands for continued MOOC research. In this regard, a major challenge is to use MOOC learning and instruction as a testbed for experiments in teaching on a large scale through technology. The chapter ends with a discussion of the implications of MOOCs for the future of HE, focusing on how a university can integrate open education and MOOCs in its pedagogical system.

Andreia Inamorato dos Santos, Yves Punie and Jonatan Castaño Muñoz report in Chapter 7 on the OpenEdu initiative within the European Union to document and analyse the scope and reach of open education in HE. One outcome has been a framework for analysis consisting of nine dimensions, five of them (Access, Content, Pedagogy, Recognition and Collaboration) core dimensions and four (Strategies and Business Models, Technology, Quality and Leadership) transversal. In addition, the chapter summarizes the results from studies of motivations and barriers for opening up education by HE institutions (OpenCases), representative data on the uptake of open education in five European countries (OpenSurvey) and an analysis of recognition and assessment practices in MOOCs (OpenCred).

In Chapter 8, Robin Middlehurst discusses three future perspectives on MOOCs: (i) continuity and change, (ii) drivers of change, and (iii) domains of disruption. In terms of the first perspective, she points out that the development is characterized by both continuity and change, i.e. traditional approaches remain at the same time as new technologies are used in MOOCs. And, as far as the drivers for change are concerned, she points to the expansion of education in terms of both demand and supply, but also the technological changes facilitating the unbundling of resources as well as the convergence and integration of technologies. Significant domains of disruption are, according to Middlehurst, assessment and credentialing, the collection, storage and access to knowledge resources, and personalized student pathways. Altogether, she foresees considerable changes in the HE landscape in the years to come.

The two chapters in Part III address the economics of MOOCs. Michael Cusumano (Chapter 9) points to the high costs of MOOC production as well as the practice of providing such courses free of charge. This, he argues, is possible
for rich high-quality institutions with global reputation, but not so for less prestigious institutions which may lose out. With reference to other industries, he points out that surviving companies often have business models that give them the opportunity to earn money from products and services associated with their free product. In HE, this may, according to Cusumano, imply that a considerable number of actors may be severely hurt by the technology changes. However, at the same time, he points out that MOOCs are not likely to replace in-person residential education. Finally, Cusumano discusses a number of policy questions in relation to MOOCs. This leads him to the key question of whether universities should focus on local tuition-paying students or on educating the world.

A fundamental economic question in relation to MOOCs posed by Devayani Tirthali in Chapter 10 concerns whether MOOCs are sustainable. In discussing this issue, she starts out by focusing on the costs associated with the production of MOOCs and the possibilities of recovering these costs. And, the answer so far, appears to be that costs generally exceed revenues. However, as Tirthali shows, many institutions have motives other than economic ones, such as branding, to launch MOOCs. This leads her to a second question of the chapter, i.e. the desirability of MOOCs. Dealing with this issue, she discusses to what extent MOOC pedagogy conserves traditional teaching methods, whether the scale of MOOCs leads to standardization or is opening up education, and the proper balance between profitability and MOOCs as a social good.

The four chapters in Part IV describe emerging models of learning and teaching inspired by or based on MOOCs. Starting from the premise that active learning is superior to traditional passive learning, Chapter 11 by Gunnar Karlsson and Sverker Janson describes an educational model for active learning consisting of blending of classroom teaching and online instruction. The model embraces the format of the flipped classroom reversing the traditional order of teaching: using online materials students prepare at home for in-class activities focused on active learning under the guidance of the teacher. A major component of the model consists of peer instruction by which students are engaged in discussion around questions posed by the teacher. The chapter describes how to develop a flipped classroom course and provides suggestions for teachers who would like to espouse it.

In Chapter 12, Tim Gore initially presents the views of various experts observing ‘disruptive’ forces in HE that can elicit profound changes which challenge established views and practices. Among others, he names new types of courses and programmes which make conventional ones superfluous, and reduction of income which challenges financial stability. He mentions recent changes as well, where traditional values are reinstated, e.g. MOOCs again strengthening the ‘teaching agenda’. Subsequently, he introduces Michael Porter’s view that five major forces change the HE landscape: ‘the bargaining power of buyers’, ‘the bargaining power of suppliers’, the ‘threat of new entrants’, the ‘threat of substitute products and services’ and, finally, ‘the rivalry among existing competitors’. According to Gore, the various views presented suggest that HE faces a typical innovator’s dilemma: new options for the future arise which are in conflict with serving current stakeholders. Finally, he presents his own institution, the University of London, as a case where new developments in education could be taken seriously early on.
A long history of involvement in teaching students from countries all over the world facilitated the turn towards taking MOOCs as a change for innovation.

Berit Kjeldstad reports in Chapter 13 on the work of a Government Commission on MOOCs in Norway set up in 2013 and presenting its report in 2014. The Commission, for which Kjeldstad was the chair, first dealt with four significant issues, i.e. the definition of MOOCs, the participants in MOOCs, quality assurance in MOOCs, and the balance between competition and collaboration. On the basis of their conclusions, the Commission then made a number of proposals to the Norwegian Government. Three recommendations requiring funding concerned: (i) a national initiative for increased digitalization of HEIs, (ii) an overall national research programme regarding the use of ICT in HEIs, and (iii) a major public initiative regarding the expertise of using MOOCs. In addition, a number of recommendations without funding requirements were provided.

Paul Rühl provides in Chapter 14 information about the Bavarian Virtual University (Virtuelle Hochschule Bayern), which is a collaboration between the nine universities and the 17 universities of applied sciences of the Free State of Bavaria. In this way, online courses are developed and offered in a system of import and export between the various institutions. The courses are developed after a process containing, first of all, open calls for proposals, then calls for tenders to selected institutions, and contracts between the finally selected institutions and the Bavarian Virtual University. In the summer of 2015, in total 391 courses were offered, and another 101 were in preparation. The fields of study where the courses were most frequent were Medical Science (67), Law (63) and Business Sciences and Economics (52). So far the courses have been relatively successful with completion rates above 50%.

In the sole chapter in Part V, Piet Henderikx in Chapter 15, presents some reflections taking into account the comments on the symposium of the participants in the final panel discussion and the subsequent intervention and discussions with the audience. His reflections address the following issues: MOOCs and learning design, the quality of MOOCs and blended/online teaching and learning, impact of MOOCs on universities, blended degree education, flexible continuing education and continuous professional development, open education online, institutional leadership, business models, and MOOCs and learning analytics.

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