# Massive Open Online Courses (MOOCs)

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Don't be afraid to ask, comrade!
Don't be talked into anything.
Check for yourself!
What you do not know yourself
you don't know.
Scrutinise the bill,
it is you who must pay it.
Put your finger on each item,
ask: how did this get there?
You must take over the leadership.
*In praise of learning* (Bertolt Brecht)

## INTRODUCTION

Massive Open Online Courses (MOOCs) comprise educational content developed for mass delivery through the internet, and became a mainstream educational trend in 2012. An article published in *The New York Times* in November of that year dubbed 2012 as "The Year of the MOOC" (Pappano 2012), and a plethora of grandiose expectations followed en masse. In a time when the average human attention span is said

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to range from five to 20 minutes, a course prepared for mass delivery must necessarily rely on multimedia content, and short videos in particular. So do MOOCs in general, which Wikipedia appropriately define as "online course[s] aimed at unlimited participation and open access via the web" (Wikipedia 2015). Early critics argued that although we're indeed talking about *Online Courses*, the first half of the acronym may be misleading. It is true that *Massive* takes up a different dimension when applied to the *World of Warcraft* MMORPG (Massively Multiplayer Online Role-Playing Game), which claims more than ten million active subscribers and 100 million accounts created since its beginning. A few hundred thousand participants hardly justify the use of 'massive' when seen at this scale, but it nevertheless represents an unprecedented success in terms of distance education. The second adjective is more problematic, since *Open* has a different meaning when used in the *open education* jargon. MOOCs are indeed 'open' for registration, but their content is by rule not available for reuse. Bearing these comments in mind, we may consider that the words in the acronym answer the basic question that underlies the second section: "What Are MOOCs?"

The third section discusses the potential of MOOCs with respect to their target public and educational scenarios. The business model underlying the provision of these courses is still evolving, but the rule is that registration is free and open to anyone, while certification is normally available as a paid service. Additional revenue may come from a variety of direct and indirect sources, but the basic model of free access and paid certification has implications itself on what these courses can be used for. The two main groups of users will comprise members of the public at large, who are normally interested in acquiring knowledge, but have no specific need for certification, and participants engaged in graduation or lifelong learning programmes, where certification is useful for academic recognition. The same content and platforms may also be used in other contexts, such as bespoken small private online courses (SPOC) for corporate training or on-campus blended-learning education.

The advantages and disadvantages of MOOCs are the subject of the fourth section in this chapter. These courses share the main advantages of other types of distance education resources, for which flexibility is the key word. The participants in a MOOC are able to carry out their activities at any time, and from any place with internet access. However, this is not equivalent to saying that the participants are free to progress at their own pace, since most MOOCs have fixed start and end dates. This rule

is essentially a consequence of one major disadvantage that is normally associated with this type of course—the difficulty of providing effective tutorial support to a large number of participants. In the vast majority of cases, answers to questions are left to the responsibility of a hardly controllable ecosystem of peer support, and therefore the importance of creating a learning cohort, by forcing a start date for the course.

The implications of MOOCs on the teaching and learning world, and particularly on higher education (HE), are the subject of the concluding section in this chapter. Much has been said in this respect, particularly because many early observers saw these courses as a threat to the sector in general, and to traditional universities in particular. Whether or not MOOCs are a form of disruptive innovation is still open to debate, and there are interesting examples of HE institutions where online delivery was the deciding factor between bankruptcy and successful survival. MOOCs are already an important form of online course delivery, and will become increasingly important as their academic recognition widens. Their implications can be anticipated in the near term with respect to the modification of pedagogical paradigms, for example in the form of flipped classroom scenarios, but also in the medium to longer term, with respect to technological aspects, and to the HE academic profession and its economic landscape.

## What Are MOOCs?

Massive Open Online Courses (MOOCs) gained widespread public attention during 2012. Hollywood-type MOOC trailers and high-quality content delivered free of charge by some of the world's best universities were perceived as a major pedagogical revolution by various academic sectors (Barber et al. 2013). Much of the over-expectation faded away during the following three years, but it is now clear that MOOCs are here to stay and will challenge traditional education as we know it. Higher education (HE) has come a long way since the 1960s, when hundreds of students packed amphitheatres at Cornell University to hear Richard Feynman's lectures on theoretical physics. It is debatable whether the *massive* audience that can be seen in those lectures (Feynman 1964) would be sustainable today, when amphitheatres have Wi-Fi and students have smartphones and tablets to distract them. Fifty years later, Cornell uses the very same smartphones and tablets as allies to attract generation Z students to similar lectures that are now delivered in the form of MOOCs (Chernoff 2015).

Many excellent MOOCs are available nowadays, frequently prepared and delivered by some of the best professors from top-ranked universities. By rule, as the acronym indicates, they are *courses* intended for a *massive* audience, supporting *open* registration, and prepared for *online* delivery. There are pros and cons in each of these words—*massive* participation helps to democratise access to high-quality educational materials, but it is incompatible with personalised support; *open* stands for free access, but should not be misunderstood as the allowance to reuse content; and *online* delivery ensures anytime/anywhere access, but will also in most cases mean strictly electronic communication, lacking any form of direct personal contact. This dualism helps to explain why MOOCs have very low completion rates, which were regarded with surprise in the earlier stages of their history.

George Siemens and Stephen Downes are normally credited as having offered the first MOOC, which was entitled *Connectivism and Connective Knowledge* (Siemens 2014). This course was delivered in 2008 to 25 tuition-paying students at the University of Manitoba, Canada, plus 2200 external participants, who attended online for free. Early MOOCs were based on networking and knowledge interchanging among participants, and their pedagogical model emphasised collaboration as a major contributor to the learning process. MOOCs of this type became known as cMOOCs, which is generally accepted to mean 'connectivist MOOCs'. The current wave of MOOCs is normally referred to as xMOOCs, where the 'x' is said to stand for 'eXtended' (Downes 2013). xMOOCs are built upon well-defined learning routes and milestones, instead of relying on collaborative study and networking as the essential means to acquire knowledge. In very simplistic terms, we may say that cMOOCs are closer to an exploratory, constructivist learning model, and xMOOCs are closer to an instructivist approach to education, where the transmission of knowledge relies largely on pre-recorded short video lectures, according to a one-to-many approach, where all interaction takes place in deferred time, normally through a course discussion forum.

Stating that xMOOCs have an instructivist flavour is by no means equivalent to saying that they promote instructivist learning models. As will be discussed in more detail in the last section (entitled "Implications on Higher Education Teaching and Learning"), MOOCs are increasingly used to transform HE pedagogical paradigms. In particular, xMOOCs can be used to flip a classroom, replacing many or all the traditional lectures with live discussions and practical/hands-on exercises. *Flipped classroom*

models have indeed been used for a long time in arts and humanities degrees, but were recently rebranded by MOOCs as a modern pedagogical approach in science and technology areas. The learning model adopted in flipped classrooms is essentially constructivist by nature, even if based on xMOOCs.

The next big milestone in the MOOC timeline was the *Introduction to Artificial Intelligence* course offered online in late 2011 by Sebastian Thrun and Peter Norvig, which registered a record-breaking number of 160,000 participants. The enrolment figures of this course were clear evidence that something new was happening, of hardly predictable consequences. Thrun launched a company called Udacity in February of 2012, which was quickly followed by Coursera in April of that same year and by several other companies since mid-2012. Non-profit ventures also followed, among them edX, which was launched by MIT and Harvard in May of 2012. In June of 2013 edX was released as an open source MOOC platform, and enabled a growing number of institutions worldwide to set up and maintain their own servers. Open edX is also used in some countries to set up a nationwide MOOC platform, as happened in Norway, where Bibsys offers this service to all Norwegian HE institutions (Bibsys 2014).

The emergence of MOOC platforms fractured the world of online learning technologies, where most e-learning platforms shared similar functional features. In simplistic terms, MOOC platforms such as edX normally host informal education courses that are open to the public, while e-learning/learning management system (LMS) platforms are used in blended learning and formal education contexts, normally hosting online courses awarding credit points which are restricted to degree students. Current MOOC platforms are in various ways much simpler than traditional LMS platforms, which comprise more sophisticated administration and assessment features. The target audiences of LMS and MOOC platforms will increasingly overlap over time, and their distinctive features will become less evident as time passes, but the dividing line between formal and informal education may keep these two families apart, at least in the near future.

According to Edutechnica's Spring 2015 updates concerning LMS market share, Blackboard and Moodle are now used in more than 50% of all US HE institutions with more than 700 full-time equivalent (FTE) students (Edutechnica 2015). Market share reports will however show widely varying figures for different specific domains, for example, US-based 700+ FTE students, global or education & government LMS market share, and so on. Whatever the observation angle, MOOCs and novel MOOC

platforms still represent a very low share of the global market. In spite of this difference, major LMS providers quickly realised the importance of supporting MOOCs, as illustrated by specific products from Blackboard (CourseSites) and Canvas (Canvas Network). In what concerns the usage of MOOCs in Europe, an information portal launched by the European Commission in September of 2013 maintains a scoreboard that registers the existence of more than 1000 MOOCs at the time of writing (OpenEducationEuropa 2015).

## The Potential of MOOCs

In a report entitled *Hire Education*, published in 2014, Michelle R. Weise and Clayton M. Christensen point out two main reasons why higher education is ripe for disruption (Weise and Christensen 2014):

1. "the price of tuition has soared; student loan debt [in the U.S.] now exceeds $1 trillion and is greater than credit card debt";
2. "employers are demanding more academic credentials for every kind of job yet are at the same time increasingly vocal about their dissatisfaction with the variance in quality of degree holders".

The mismatch between degree qualifications and employer satisfaction is not new, and had already been termed 'the great mismatch' by *The Economist* three years earlier (The Economist 2011). The major problem faced by traditional 'brick and mortar' universities is that "they are unable to respond naturally from within", as pointed out by Weise and Christensen—their value proposition model is just too stable, and has been basically the same for centuries. On the other hand, new universities offering online degrees centred their value proposition models on two potentially disruptive factors: convenience and low cost. MOOCs play a relevant role in this context, but their disruptive potential depends on a variety of factors that go well beyond student debt and qualifications mismatch (which are not at the same level in Europe and in the USA).

There are also non-technological, but possibly no less disruptive factors. The transformation of student profiles is at the top, as explained by Gabriel Kahn in a 2014 Slate magazine article (Kahn 2014):

College is still designed for 18-year-olds who are signing up for an immersive, four-year experience replete with football games and beer-drinking. But those traditional students make up only 20 per cent of the post-secondary

population. The vast majority are working adults, many with families, whose lives rarely align with an academic timetable.

MOOCs may represent a viable option for these new student profiles, particularly if it is possible to claim study credits upon successful completion. Informal recognition is already available through a variety of digital means. Basic digital certificates are awarded free of charge by MOOC providers, and a growing number of academic institutions issue open badges supported by the Mozilla foundation.

The education world had indeed been changing fast, prior to the emergence of MOOCs, and continues to do so independent of the MOOC mania. The implications for HE teaching and learning will be discussed in the last section of this chapter, and comprise pedagogical, technological, and economic consequences. The potential of MOOCs with respect to their target public and educational scenarios can be summarised as shown in Table 12.1.

**Table 12.1**   The potential of MOOCs with respect to their target public and educational scenarios

| | |
|---|---|
| Open access to informal education | Anytime, anywhere, free of charge: MOOCs are the closest that we've come to this education utopia. Reality will lag behind in the case of course calendars with pre-defined start and end dates, political restrictions limiting internet access, and business models driven by for-profit ventures, or sustainability of non-profit initiatives. Nevertheless, the past three years witnessed the development and delivery of thousands of MOOCs, offering a wide variety of informal education resources (formal education impact proceeds at a slower pace, as a consequence of pedagogical and economic uncertainties) |
| Data collection | The science of educational/learning analytics now has access to a huge amount of fine-grained information about how students learn (Long and Siemens 2011). Every action of each student becomes part of his/her digital footprint in a MOOC. An extraordinary wealth of data is now available that may be used to correlate demographic information, student success, usage patterns of digital content, collaborative and social networking behaviours, and so on. Considering that reading habits and knowledge acquisition methods are fundamentally different among pre- and post-internet generations, the pedagogical data collected by MOOC platforms is vital to optimise course design and learning performance |

**Table 12.1**  (continued)

| | |
|---|---|
| Recruitment | When hundreds of thousands of people from all over the world come together as a single learning cohort, the data collected about their activity is not just important for pedagogical aspects; it may also be used for head hunting purposes, or likewise by a university for hunting the brightest students |
| Transformation of pedagogical paradigms | Integrating MOOCs into university courses is increasingly common, and brought flipped classrooms into the spotlight as a mainstream pedagogical paradigm in science and technology courses. It should be said that flipped mode classes have been used for a long time, particularly in arts and humanities, but the availability of MOOCs greatly facilitated their implementation in other areas |
| Partnerships with industry and communities | Industry-university partnerships can greatly improve the quality of science and technology courses, but industry experts have little time to deliver lectures during their working hours. Integrating those lectures in a MOOC not only solves this problem, but also ensures reusability of content from one learning cohort to the next |
| Corporate training | Continuing professional education and on-the-job training have made use of distance education alternatives in the past, but the availability of high-quality MOOCs offered by some of the world's best universities is increasingly important as a corporate training alternative (Bersin 2013) |
| Business value for alternative education providers | The provision of MOOCs is already an important business area, and several companies were set up specifically for this purpose since 2012. This type of online courses can be particularly important for alternative education providers as referred elsewhere in this book (cf. the chapter *Quality, e-Learning and Alternative Providers of Higher Education* (Chap. 14) by Judith S. Eaton) |
| Internationalisation | MOOCs can be excellent ambassadors for institutional internationalisation via programme mobility (cf. Table 1.2 of the chapter *Cross-Border Higher Education: A New Business?* (Chap. 1) by Alberto Amaral). Their global reach represents an unmatched opportunity to showcase the educational portfolio of each institution and to attract international students for on-campus programmes |

We are still witnessing the infancy of MOOCs, and there is a long way ahead before we can assess their longer-term impact on both formal and informal education. Some conclusions may start to be derived from pioneering studies, and the interested reader will find plenty of information in two reports detailing the first two years of edX courses at Harvard and MIT (Ho et al. 2014, 2015). The impact of MOOCs on residential

blended-learning education is particularly worth mentioning, namely in what concerns identified patterns of user participation and certification across courses, and its relation to course completion rates. These aspects are particularly interesting in the context of course sequences (*XSeries* in edX, *Specialisations* in Coursera), which are becoming increasingly popular due to their relevance in terms of monetisation strategies, accreditation of studies, and acquisition of job skills (Blake 2014; Coursera 2015). The demographic data available in the Harvard/MIT edX reports also offers valuable insight as to how MOOC participants split into several main categories. As further information becomes available, learning analytics correlating learning practices and academic success will be of fundamental importance for influencing instructional design practices and pedagogical strategies (Yousef et al. 2015).

After all the hype surrounding MOOCs in 2012, the low-profile reality that followed reached the bottom line when Sebastian Thrun, co-founder of Udacity, stated publicly in a 2013 interview that MOOCs were 'a lousy product' (Chafkin 2013). Not surprisingly, the 2014 Gartner's Hype Cycle for Education showed MOOCs in the 'Trough of Disillusionment' phase. Likewise, in a 2014 survey conducted by the Huron Consulting Group for the Chronicle of Higher Education, Chief Information Officers (CIOs) and faculty placed MOOCs in the very last position among nine alternatives addressing "innovations that will have the most positive impact on American higher education in the future" (The Chronicle of Higher Education 2014). The percentage of CIOs and faculty who indicated MOOCs in the survey was only 2 % in the case of two-year degrees, 3 % for four-year degrees in public schools, and 4 % for four-year degrees in private schools. On the opposite end of the scale, ranging from 59 % to 68 %, was 'adaptive learning to personalise education'. Given the downfall in expectations, how shall we assess the potential of MOOCs now? According to the Hype Cycle for Education page maintained by the University of Minnesota, MOOCs left the 'Trough of Disillusionment, in 2015, and are now in the "Slope of Enlightenment" phase (University of Minnesota 2015).

## Advantages and Disadvantages

Like all other teaching and learning approaches, MOOCs have pros and cons. It is possible to list them in a dualistic manner as shown in Table 12.2, where advantages and related disadvantages are associated according to each feature represented in the acronym.

**Table 12.2** MOOCs—a dualistic perspective of advantages and disadvantages

| Feature | Advantage | Disadvantage |
|---|---|---|
| Massive | Change pedagogical paradigms. Democratise access to informal education | Lack personalised support |
| Open | Promote institutional internationalisation | Blur cultural diversity |
| Online | Enable extensive learning analytics. Support anytime/anywhere access | Allow many options for academic dishonesty. Peer interaction is limited to electronic communication |
| Course | Offer high-quality informal educational content from top universities | Face accreditation difficulties |

The organization of a *massive* course designed to be delivered to an audience that may reach hundreds of thousands of participants leaves few pedagogical alternatives. To start with, peer support may be the only form of help available. Tutors may be hired to support forum discussions, but this solution is not compatible with a massive participation of students from all over the world. It represents a huge contribution to democratise access to informal education, but the bottom line is the absolute lack of personalised support, which is a distinctive disadvantage of MOOCs in general. However, these very same features also open up interesting possibilities to change on-campus blended-learning pedagogical paradigms (Docq and Ella 2015). Flipped classrooms became the classic example associated with the integration of MOOCs into university courses, but there are other less common examples, such as distributed flips (Caulfield 2013). Whatever flipping method is adopted, swapping classroom time with interactive or practical work, instead of allocating it to theoretical plenary sessions, represents a move towards student-centred models.

The *open* registration policy of MOOCs enables the participation of students from all over the world, creating a truly international cohort. The same happened in distance education courses offered decades ago, but their one-to-many nature did not facilitate interaction among the participants. As a showcase of the educational portfolio, a MOOC catalogue is also an effective tool to promote programme mobility. A noted drawback is that there is a risk of impoverishing cultural diversity, if the content shared by all the participants is exactly the same in all countries. Licensing of content as a monetisation strategy can counteract this tendency, and the translation of edX courses into Mandarin may be pointed out as a known example. The growing number of MOOCs created in Europe also

acts in favour of preserving cultural diversity, particularly if we consider the variety of languages in which they are being produced. One distinct disadvantage of xMOOCs is that 'open' means nothing more than 'open registration', since the vast majority of these courses do not support, or even allow, other instructional designers to reuse their content.

Contrary to many previous distance education courses, in which physical documents were mailed through the postal system, *online* courses can be built solely on digital content. Access at any time, from anywhere, isn't really 100 % true, but the combination of flexibility and quality of content has reached new heights with MOOCs. On the other hand, the footprint left by MOOC participants offers an unprecedented wealth of pedagogical information, which will help us to understand how people learn, and also how to optimise instructional design methods. A noted disadvantage of the 'online' mode, in the context of MOOCs, is that all interaction will take place by electronic means, leaving out direct personal contact with teachers or the remaining learning cohort. On the other hand, not even the most sophisticated identity management systems are able to detect and prevent fraud. A wide range of educational and professional services are now available online that can also be used for academic dishonesty purposes. Any student can commission his/her assignments through various online academic concierge services. The quality of the deliverables will vary, particularly when an assignment is set up for bidding on a tight budget, using an academic freelancing or outsourcing platform. Independent of their quality level, all such deliverables will (supposedly) be original pieces of work, and as such will pass undetected through traditional plagiarism detection tools (task descriptions posted in such sites frequently inform the bidders that their deliverables will be submitted to Copyscate or Turnitin before being handed over to academic authorities). Accreditation of studies made through MOOCs may be possible if assessment is based on proctored exams, but the wide availability of cheating gadgets (Monorean 2015) weakens the use of videoconferencing for this purpose. Notice that academic dishonesty can also be found at institutional level, and has already been addressed in the *Cross-Border Higher Education* chapter of this book (cf. section "Degree Mills, Rogue Providers and the Need for Strong Regulation" in Chap. 1). There is in fact a growing number of companies offering fake degrees online, lectured by 'permanent faculty' impersonated by stock photo models (Anderson and Pesca 2015).

All *courses* designed to become a MOOC aim to offer free access to high-quality educational content. The need to generate revenue is not forgotten, either in the case of non-profit initiatives such as edX, or in the case of for-profit companies such as Coursera, Udemy, Udacity, FutureLearn, iversity and others. Out of sustainability concerns or due to the need to care for investor objectives, there are a variety of monetisation strategies that may include tuition fees, paid approval certificates, provision of learning analytics, and so on . In most cases, however, it will be possible to enrol in a course and to follow it through without any cost. Given the high quality of many MOOCs, and the prestigious universities that are behind them, free access remains as one of the main advantages of MOOCs, and has certainly made a difference for democratising access to informal education. However, learning in a do-it-yourself world unavoidably faces accreditation restrictions. Given the range of academic dishonesty options referred to in the previous paragraph, the only way to ensure that the students achieved the proposed learning goals is to set up a final exam, with its accompanying cost. Some people may see this condition as a disadvantage, but it should be added that paying for an exam, in a tuition-free course, is already common in similar contexts—the University of the People in the USA has no enrolment or course content charges, and its sustainability is ensured by small processing fees that are solely related to the application process and final exams. Accreditation difficulties may be regarded as a disadvantage of MOOCs, but it should be said that the associated cost is not the only reason: Contrary to what happens with cross-institution academic recognition concerning traditional courses, very few MOOCs are valid for credit in more than one university.

## Implications on Higher Education Teaching and Learning

The availability of high-quality online courses free of charge facilitates the development of online universities that challenge the traditional brick and mortar model. In a TEDx talk delivered in 2012, Michele Pistone claims that universities survived unchanged for centuries because they possessed knowledge and experts, which scarcely existed elsewhere in the past, and also because they possessed socially accepted mechanisms for certifying mastery (Pistone 2012). The fact that knowledge and experts are now easily accessible at our fingertips certainly questions the survival of the traditional HE model, which is still protected by the

fact that universities remain, at least for the time being, the only socially acceptable form of acquiring a degree. However, various disruptive education scenarios may question the survival of traditional universities as we know them today (Weise and Christensen 2014). The disruptive potential of MOOCs may not be sufficient to destroy HE as we know it, but it is not difficult to anticipate some of their implications in pedagogical, technological and economical areas.

The pedagogical implications were largely addressed throughout the previous section, where we considered the advantages and disadvantages of MOOCs. The new pedagogical paradigms integrating MOOCs into blended-learning university courses are particularly worth mentioning, because they promote student-centred education models. Traditional HE pedagogical paradigms are still very much based on teacher-centred plenary classes, which survived the Bologna revolution for two main reasons:

1. Research-intensive universities value scientific productivity over pedagogical excellence
2. Plenary lectures are traditionally well accepted by students, who resent the higher workloads of active learning methods

Flipped classrooms based on MOOCs can be a game changer in this context, because they release classroom time that can be used for discussions and practical work, while offering the students easy access to theoretical content that can be consumed anywhere, at any time of their convenience (Contact North 2015).

The technological implications are unfolding quickly. It has already been noted that CIOs and faculty undervalue the innovative potential of MOOCs for HE (The Chronicle of Higher Education 2014), but their number continues to grow at a remarkable rate, both in Europe and in the USA. The decision taken in 2013 by MIT and Harvard to release the edX platform code as open source enabled any institution to set up their own MOOC server, and effectively created a competition between traditional LMS platforms and MOOC platforms. Many institutions nowadays offer e-learning and MOOC support to their faculty, without a clear definition of their respective application domains. The dividing line between e-learning and MOOCs was further blurred by the fact that several e-learning companies started offering MOOCs, as happened with Blackboard's CourseSites and Canvas Network, and several universities developed their own MOOC platforms based on a traditional LMS, e.g.

on Moodle (Lorenz et al. 2015). The essential differences between a traditional LMS platform and a MOOC platform are but just a few:

1. The number of users in a single course, which are expected to be much higher in a MOOC;
2. The variety of pedagogical features and administration and assessment modules, which are usually more sophisticated in a traditional LMS platform;
3. The delivery of content is widely based on video streaming in the case of MOOCs.

Usage scenarios and current developments suggest that the technical features of MOOC platforms and traditional LMS platforms will become more similar. On the other hand, and since MOOCs became a mainstream tendency in the context of distance education, where dematerialisation was ensured by default, their progressive acceptance in blended-learning contexts will push the on-campus dematerialisation trend, including a more frequent use of digital certificates and open badges.

The economic implications of MOOCs can only be partially envisaged at this time, both because their business model is still under development, and also because the prevalence of online courses will modify faculty structures and the nature of HE jobs in ways that depend on a variety of social factors (Carey 2015; The Economist 2015). A recent study addressing the future of MIT education anticipates that "the roles of MITx instructor and MITx student may exist in 2020" (Massachusetts Institute of Technology 2014, p. 22). In this context, it is particularly interesting to reference the case of the Southern New Hampshire University (SNHU) in the USA: in a period of five years, SNHU multiplied its number of students by 17 and took up a leading role among US HE institutions offering online education (Raths 2014). Their financial model can be used as an example concerning the anticipated economic implications of MOOCs used in blended-learning contexts: "Just like many of the for-profit universities, SNHU tries to maximise efficiencies and scale up everything it does to drive down costs. At SNHU, online courses are created centrally and then farmed out to a small army of adjuncts hired for as little as $2,200 a class" (Kahn 2014).

The full implications of MOOCs are yet unclear at this stage, but it is certain that the number of HE institutions investing in the production of these courses will continue to grow for years ahead, and that they

will become increasingly common in blended-learning on-campus education. Accreditation of MOOCs will become progressively standard in traditional universities, and examples are already available in this respect (Straumsheim 2015). MOOCs are still in their infancy as a mainstream educational resource, but it is already evident that this form of online coursework is here to stay, and that it has already made a huge contribution to democratising access to informal education in all parts of the world where internet access is available.

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