# The 2018 OpenupEd Trend Report on MOOCs

OpenupEd EADTU Erasmus+

## Editors

European Association of Distance Teaching Universities (EADTU) | Darco Jansen; Lizzie Konings

## Authors

European Association of Distance Teaching Universities (EADTU), The Netherlands | Darco Jansen
Dublin City University (DCU), Ireland | Mark Brown
Universidad Nacional de Educación a Distancia (UNED), Spain | Timothy Read; Elena Barcena; Beatriz Sedano
UniMOOC; Universidad de Alicante (UA), Spain | Adam Lapworth
Anadolu University (AU), Turkey | Cengiz Hakan Aydin
University of Wolverhampton (UoW), United Kingdom | John Traxler
University of Oviedo (UNIOVI), Spain | Aquilina Fueyo; Isabel Hevia; Sara Velasco
Linnaeus University (LNU), Sweden | Alastair Creelman
University of Birmingham (UBir), United Kingdom | Gabi Witthaus
FH JOANNEUM, Austria | Christian Friedl
Hasso Plattner Institute (HPI), Germany | Thomas Staubitz
Hellenic Open University (HOU), Greece | Christoforos V. Karachristos; Fotis Lazarinis; Elias C. Stavropoulos; Vassilios S. Verykios



**Published by**: European Association of Distance Teaching Universities, The Netherlands




## Correspondence

European Association of Distance Teaching Universities (EADTU)
att George Ubachs, Managing Director
Parkweg 27, 6212 XN Maastricht, The Netherlands
Tel: +31 43 311 87 12 | E-mail: secretariat@eadtu.eu
www.eadtu.eu | www.openuped.eu



## Suggested citation

Author(s) (2018) Title of paper. In D. Jansen; L. Konings (Eds.) The 2018 OpenupEd Trend Report on MOOCs. (pp. Pages). Maastricht, NL: EADTU. Retrieved from https://tinyurl.com/2018OpenupEdtrendreport

# Table of contents

# Foreword

This is a report by various experts on current trends on Massive Open Online Courses (MOOCs) especially focussing on Europe. MOOCs are offered online only, providing massive and open learning opportunities for all, promoting engagement in the knowledge society. Investments in and the uptake of MOOCs are more and more significant worldwide. MOOCs, and open education in general, are providing new learning opportunities for millions of people. In addition, MOOCs are a significant innovation in (higher) education, and a lever for innovation in mainstream degree education. It is expected that MOOCs will have an impact on the further development of formal higher education and continuous professional development, as well as in opening up education.

This OpenupEd trend report discusses the latest general trends and developments in MOOCs from a European perspective. Several independent European studies conclude that European higher education institutions are strongly involved in MOOCs and are using MOOCs to offer flexible learning opportunities and to increase their institutional visibility. *Mark Brown* elaborates on these strategic institutional drivers and describes three waves of the MOOC movement over the recent years. *Timothy Read, Elena Barcena and Beatriz Sedano* discuss their observations on a range of MOOC related topics. One topic is related to business models and securing income streams of various international MOOC platforms. *Adam Lapworth* in this respect elaborates on the experiences of UniMOOC in making it a sustainable MOOC platform without funding. *Cengiz Hakan Aydin* clearly demonstrates that the MOOC programme at Anadolu University strongly innovated the main degree education both on-campus and of distance education.

Next, the MOOC's playfield is also influenced by national level (governmental support and innovation strategies for online and open education) and institutional level objectives and priorities. In this respect, many MOOC initiatives in Europe seem to be related to the social dimension of the education system. This is not only reflected by investments of governments, regions and many universities related to their social mission, but also in the pedagogical approach of MOOCs. *John Traxler* reflects on the more community driven approach using the case of MobiMOOC. *Aquilina Fueyo and Isabel Hevia* describe their experiences with MOOCs based on Communities of Inquiry. Moreover, *Alastair Creelman and Gabi Witthaus* provide an overview of different initiatives for face-to-face support structures for MOOC-based learning. These three short papers indicate that community driven aspects are very much needed.

Increasingly, MOOCs are also used for in-company training and lifelong learning activities. *Christian Friedl and Thomas Staubitz* elaborate on the current European MOOC trends in using MOOCs within the corporate context. *Christoforos V. Karachristos, Fotis Lazarinis, Elias C. Stavropoulos and Vassilios S. Verykios* discuss the use of MOOCs in the continuous professional development of teachers, in combination with face-to-face sessions.

This publication is coordinated by OpenupEd. OpenupEd is the first, and, thus far, the only pan-European MOOC initiative. The OpenupEd initiative is a European MOOC portal and community of universities providing MOOCs and working together within a Quality Framework and label. Within (EU-funded) projects, OpenupEd partners and stakeholders are setting the research agenda for Europe, partly based on their three successive

annual surveys on MOOC strategies of European Higher Education Institutions and the research activities by EUA and JRC-IPTS confirming a distinct and more mature European MOOC approach.

We certainly believe this first OpenupEd trend report will be an inspiration for many to further use MOOCs and start cooperation and sharing of expertise with other (European) MOOC providers and possibly connect with the European MOOC Consortium (EMC), of the main European MOOC platforms (FutureLearn, FUN, MiríadaX, EduOpen and OpenupEd).

Darco Jansen
Coordinator OpenupEd
Programme manager EADTU

**Professor Mark Brown**

***Dublin City University***

# Why Invest in MOOCs? Strategic Institutional Drivers

## Innovative impact

MOOCs continue to rapidly evolve. The MOOC movement now has many different faces and is far more complex and nuanced than simply being a platform where traditional elite universities offer free online courses to help promote their international brands. Indeed, with the emergence of the third wave or generation of MOOC, and more specifically new global alliances and flexible credit earning pathways contributing to micro-credentials and even full degree programmes, many governments, policy-makers and institutional leaders would benefit from deeper appreciation and understanding of the evolution of the MOOC. Recent developments illustrate how the MOOC is starting to influence thinking about the nature of traditional campus-based education and through new alliances opening up opportunities for more flexible credit earning models of continuing professional development and life-long learning. It follows that we can expect the MOOC movement will continue to evolve. The choice is whether to standby and watch on the sidelines or embrace opportunities to innovate and help shape how we harness new and emerging models of online learning to create better futures for all.

## Introduction

This brief paper asks the question why do higher education institutions continue to invest in MOOCs and what are the perceived strategic benefits? The inverse of this question also invites readers to reflect on, and infer why, the MOOC movement has not been a strategic priority for many European governments, universities and higher education providers. In attempting to answer this overarching question the MOOC is shown to be a complex and multi-faceted phenomenon, which is something not fully appreciated in the research literature, policy language and related popular debates. After establishing that MOOCs can have many difference faces, which vary pedagogically in both style and substance, the remainder of the paper then reflects on three waves or generations of the MOOC movement since its inception. A range of different MOOC drivers and potential opportunities is then outlined and the paper concludes that the "third wave" of the MOOC movement requires a more strategic response from governments, policy-makers and institutional leaders.

## Not a single entity

An anchoring premise of this paper is that both critics and proponents of the MOOC movement are often guilty of treating "the MOOC" as a single entity. Put another way too often the xMOOC by popular definition is seen as having the same common traits, features and characteristics -- irrespective of quite different contexts, design models and delivery platforms. The basic argument is the conception of the MOOC as a single entity is overly simplistic. After all, it would be naïve to claim, for example, that all face-to-face teaching has the same design qualities, benefits and outcomes. There are many different ways of designing and delivering face-to-face instruction and even the traditional lecture has many variations. It follows that not all face-to-face teaching is good and therefore the delivery mode by itself should not be uncritically treated as the "Gold Standard" of high quality teaching.

In a similar vein, "online learning" as an alternative delivery mode, which includes the MOOC as an important subset, has many different faces. Thus the MOOC needs to be understood as a multi-faceted phenomenon. Therefore, we should be wary of narrow binary debates and sweeping generalisations about either the upside or downside of MOOCs as they are both unhelpful and problematic. The key point or main takeaway message is the research literature tells us quite conclusively that delivery mode alone is not the major factor when it comes to determining the quality and effectiveness of instruction (Siemens, Gasevic & Dawson, 2015).

## Best practices

Institutions committed to innovating with and harnessing the potential of MOOCs are increasingly:

• Looking at ways of integrating MOOCs into the learning experiences of campus-based students.

• Experimenting with MOOCs to push the boundaries and design features of more common virtual learning environments (VLEs).

• Seeing MOOCs as a means of increasing the level of choice and variety of course offerings for all students.

• Taking advantage of MOOCs to help promote readiness and the academic capital of prospective students.

• Integrating MOOCs as part of a strategy to internationalise the curriculum.

• Exploring ways of offering scholarships for MOOC completion to international students living in developing countries.

• Using data collected through MOOCs to build institutional capacity and capability in the area of learning analytics

• Adopting MOOCs as part of a wider dissemination plan for major research projects.

• Using MOOCs as a resource and opportunity to promote effective online learners as an important outcome in itself.

• Exploring the advantages of closer collaboration with other institutions offering MOOCs on the same platform, including conjoint degree programmes.

There are many other important factors to consider in the design of effective instruction, such as teachers' beliefs, underlying pedagogical assumptions, learning intentions, type of subject discipline, learners' pre-conceptions and background experiences, and the wider instructional culture, to name a few. What this point illustrates is the importance of ensuring that the MOOC as a multi-faceted educational experience is not disconnected from wider pedagogical considerations about the potential of new and emerging 21st Century models of digital learning. In this respect the MOOC is part of a wider and ever-changing digital learning ecology, which is not restricted to particular delivery modes.

# Three MOOC waves

Mindful of the danger of sweeping generalisations this section outlines three main waves in the development of xMOOCs since they first became a distinctive feature of the higher education online learning landscape. The metaphor of waves is adopted to indicate fluid boundaries between each period of development and how as a force they continue to wash together and ebb and flow in shaping the evolution of the MOOC movement.

## *Wave 1 - MOOCs for marketing*

Early adopters from mostly traditional elite universities primarily valued the xMOOC as a powerful global marketing tool (Allen & Seaman, 2014). Although a nest of other drivers are typically associated with the origins of the MOOC movement, including the language of access, flexibility and opening up higher education to all, this claim is evidenced in the findings of the annual Allen and Seaman (2014) survey of online learning in the United States. The authors report the two most cited reasons for introducing MOOCs were marketing-related: (i) to "increase the visibility of the institution" and (ii) to "drive student recruitment".

Hollands and Tirthali (2014) report a similar trend from interviews with more than 80 educational leaders across a range of predominantly US-based institutions, with 41% identifying "building and maintaining their brand" as the key reason for offerings MOOCs. Many sceptics at the time viewed the MOOC as simply a clever marketing ploy by some of the world's top universities to reinforce the value of traditional face-to-face teaching where students get a *real* education. That said, with the benefit of hindsight this interpretation may be overly theorised, as the "fear of missing out" (FOMO) appears to have also played an important role in early university initiatives.

## *Wave 2 - MOOCs for life-long learning*

It is generally accepted that Europe was much slower than the United States to embrace the potential of MOOCs, although the level of interest grew quickly over this second wave, with the launch of the OpenUpEd portal and several European funded projects (e.g., EMMA, HOME, MOONLITE & SCORE2020), along with the increasing profile and development of the UK-based FutureLearn platform.

Importantly, during this period major initiatives were developed in Italy, France and Spain that rarely attract the attention they deserve in the brief history of MOOCs published in English speaking publications. For example, the FUN MOOC platform in France has developed almost 500 courses and registered more than one million learners. It also needs to be noted that down under in Australia the Open2Study platform managed by Open Universities Australia (OUA) attracted a small foothold in the emerging MOOC market with over 50 courses and a million learners. Other regional developments occurred typically using the EdX platform in countries like China, India, Indonesia, Mexico and Russia along with an Arabic platform serving the Middle East.

A notable difference emerged in the drivers between early MOOC initiatives in Europe and the United States, with the primary objective of "Increasing student recruitment" not featuring highly in the equivalent institutional survey (Jansen & Schuwer, 2015). Notably, the goals of "Generating income", "Learning about scaling" and "Exploring cost reductions" were perceived to be the least important objectives to institutions in all three European surveys (2014, 2015, 2016). In contrast the goal of "Increasing flexible learning opportunities" continues to feature prominently and was the most important institutional objective in the 2017 iteration of the annual European survey (Jansen & Konings, 2017).

Although speculative there is reason to believe that during this period the rapid growth of MOOCs in continental Europe was influenced by the long tradition of viewing higher education as a "public good" and the value placed on promoting access to life-long learning. That said, it would be naïve not to acknowledge economic factors, such as the influence of high youth unemployment in some European countries and perceived skill gaps in key industries as macro-level drivers for the development of MOOCs. There is also reason to believe based on an analysis of the Open Education practices, beliefs and strategies in five European countries (France, Germany, Poland, Spain and the United Kingdom) that over this period supporting regional and national policies were important enablers in supporting the growth of MOOCs (Imamorato, Mitic & Morais, 2016).

## *Wave 3 - MOOCs for credit and CPD pathways*

Over the past year the European MOOC movement has evolved with the rapid emergence of new credit earning pathways and business models that more explicitly target the continuing professional development (CPD) market. For example, in early 2017 FutureLearn introduced its first suite of online degrees through a strategic partnership with Deakin University and more recently Coventry University with the latter planning to develop 50 programmes over the next 5-years. A number of other universities around the World are known to be negotiating to join this special "degree partner" status within FutureLearn, which adopts a business model not dissimilar from the major airline alliances (e.g., Oneworld or Star Alliance).

In a similar vein, the Virtual Exchange Alliance was formally launched in early 2017 as a partnership between eight leading institutions around the World, including Delft University of Technology, Leiden University, Wageningen University in The Netherlands. The stated intention is to open up the curriculum to students from partner universities and use MOOCs to forge cross-boundary and cross-cultural awareness, knowledge and friendships around the globe without having to leave your own Country.

In October 2017 the European MOOC Consortium (EMC) was launched with a goal to "strengthen the continuing education sector by increasing the credibility and visibility of MOOCs, by developing a framework for the recognition of micro-credentials, and by working towards the adoption of that framework by stakeholders across Europe". This initiative is another sign of the growing convergence between major European MOOC initiatives and the willingness to collaborate rather than compete. A related collaborative development in the first half of 2018 was the launch of EADTU's Mobility Matrix designed to support joint Masters programmes and greater virtually mobility across European universities.

The above developments, coupled with emergence of "Nano degrees" and "Micro Masters" from major US platforms, is likely over the next few years to fundamentally change the current MOOC landscape. While free MOOCs have never been more popular, with almost 80 million learners registering for an online course in 2017 (Class Central, 2018), the combination of new building blocks, flexible pathways and international alliances leading to recognition of credit for university-level study is arguably the most significant new development.

# Looking to the future

It is almost impossible to predict how this third wave will evolve but MOOCs are certainly not going away. Interestingly, in Germany there is even a proposal following a recent feasibility study to establish a national platform for online learning. This development highlights once again the role that central and regional governments can play in enabling innovative new models of online learning consistent with the aims of the recently launched Digital Education Action Plan for Europe. In Ireland my own university is taking some of the latest MOOC developments seriously. Indeed, we see MOOCs as an important driver and enabler for fostering a strong culture of innovation in teaching and learning. Notably, our plans include using MOOCs, even those offered from other institutions, as a core feature of the campus-based learning experience. Moreover, carefully selected MOOCs integrated within the student experience provide a vehicle to help internationalise the curriculum. We also see MOOCs as a valuable resource for promoting readiness, academic capital and successful transition to higher education. Increasingly we expect MOOCs will be aligned with our wider goals of research dissemination and provide a platform for the development of conjoint programmes and CDP pathways with other institutions. As Ireland's first "University of Sanctuary" we are also exploring ways of using MOOCs to extend our current scholarships for refugees and asylum seekers for online study. Lastly, we also see learning how to become an effective online learner through MOOCs as an important outcome in itself, and valuable preparation for living and earning in the 21st Century. Hence at Dublin City University the MOOC has many dimensions that go well beyond being seen as simply a platform for institutional branding.

# Conclusion

The strategic question for other governments, policy-makers and institutional leaders is how should they respond to the third wave of the MOOC? In many respects this question requires more serious debate about why we should continue to invest in traditional models of education even though we know not all face-to-face teaching is effective—nor is it accessible to all. These issues aside the "new reality" is that the many and varied faces of the MOOC, as outlined above, are beginning to open up new credit earning pathways and fundamentally challenge traditional binary conceptions between on-campus and off-campus models of learning. The choice for governments, policy-makers and educational leaders is to either ignore these developments or play an active role in helping to shape new learning models and pathways that prepare life-long learners and citizens for better futures.

# References


Allen, I. E., & Seaman, J. (2014). *Grade change: Tracking online education in the United States.* Available from http://www.onlinelearningsurvey.com/reports/gradechange.pdf

Class Central, (2018). *MOOCs by the numbers in 2017.* Available from https://www.class-central.com/report/mooc-stats-2017/

Hollands, F., & Tirthali, D. (2014). *Why Do Institutions Offer MOOCs?* Available from https://www.academia.edu/9046539/Why_do_institutions_offer_MOOCs_2014

Jansen, D., & Konings, L. (2017). *MOOC strategies of European institutions.* Available from https://eadtu.eu/home/publications

Jansen, D., & Schuwer, R. (2015). *Institutional MOOC strategies in Europe*. Available from https://eadtu.eu/home/publications

Imamorato D. S., Mitic, M., & Morais, R. (2016). *How are higher education institutions dealing with openness? A survey of practices, beliefs and strategies in five European countries*. Available from https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/how-are-higher-education-institutions-dealing-openness-survey-practices-beliefs-and

Siemens, G.., Gasevic, D., & Dawson, S. (2015). *Preparing for the digital university*. Available from https://linkresearchlab.org/PreparingDigitalUniversity.pdf

**Timothy Read, Elena Barcena & Beatriz Sedano**

***Universidad Nacional de Educación a Distancia (UNED)***

# Current Trends in MOOC Research and Applications

## Innovative impact

The short term innovative impact of MOOCs is that of providing, for the first time, a wide range of people (whether already in or outside formal education) with access to online learning resources and activities in a more or less structured way, with all the potentially life-changing consequences that it entails. The acronym "MOOC" is not used anymore to refer to just one type of course, but to a whole range of different ones that include characteristics related to massive open online learning, among others. The emphasis of these courses is no longer, necessarily, on being "open", but on providing a variety of teaching and learning services to different types of people. MOOCs are not only being used as standalone courses but also as a way to potentiate and complement face-to-face formal education. The types of participant of MOOCs range from those who do not have access to formal education (displaced people like refugees and migrants) to those who are already in stable employment and require flexible knowledge and skill updating as part of their lifelong learning.

The long term innovative impact of MOOCs is harder to predict, since it is likely that the term itself will fall into disuse as time goes by. The various forms of online learning to come will more readily and adaptively empower the members of the knowledge society with the very tools and resources they need to face their unforeseeable challenges.

Since MOOCs first appeared on most peoples' radar back in 2012, they seem to have captured our imagination in a way that doesn't happen very often, and there has been a lot of interest in this learning modality. Consequently, MOOCs have been the object of many academic and research projects and publications. Now in 2018, six years later, the flow of this work does not seem to abate. There is a rich and varied literature on a range of topics related to MOOCs, too large to reasonably analyse here. A previous analysis by Gasevic, Kovanovic, Joksimovic & Siemens (2014) highlights: student engagement and learning success, MOOC design and curriculum, self-regulated and social learning, social network analysis and networked learning, and motivation, attitude and success criteria. Here, the authors move forward from this work to analyse the state of MOOC research and applications, and highlight current trends that will surely continue to shape this field in the future.

Initially, MOOCs were presented as a "completely open" educational modality, including different types of content and activities, disruptive by nature (although very few academics still believe that they will actually affect universities negatively). They are essentially divisible into two types: xMOOCs and cMOOCs; the former, having essentially content-based interaction and a rigid structure; and the latter, social media-based interaction, adopting a connectivist learning approach, with little if any structure (Conole, 2013). Anders (2015) undertakes a meta-analysis and synthesis of the related research literature and identifies a continuum of MOOC designs that combine different aspects of previous online courses to make up what can be seen to be a range of courses for different types of students. The author goes on to describe these courses as "hybrid MOOCs", to highlight the way they bring together aspects typically found in different types of online learning. This is a useful term that will probably come to be used more in the future. It should be noted that not all of MOOC variants are still "completely open" and, as will be seen below, when the underlying business model of these courses is discussed, some only follow some of the letters in the acronym. Furthermore, the audience of current MOOCs is more varied now than earlier and ranges from disadvantaged social groups, who cannot access formal education, through to employed professionals, seeking training as part of their "life-long learning" needs. Since MOOCs first appeared, it has been argued that they can be used to support on-campus learning (Koller, 2012). Subsequent research seems to support that view (Israel, 2015). In a recent report published by the Danish Accreditation Institution (https://goo.gl/cFPTUf), a series of factors are highlighted for MOOCs to support face-to-face learning and be accepted as part of standard university teaching, namely: the pedagogical approach used; the credibility of certification and its recognition by the educational institutions and employment market; dropout; and finally, the academic level of the teachers on the course.

## Best practices

Best practice in the field of MOOC design, development, and deployment can be identified in the research and application community in the following ways:

- Widening of MOOC models to provide a variety of courses appropriate for different types of participants, ranging from displaced people with little/no access to formal education and to others already in employment and looking for a knowledge/skill refresh.
- Progress in the business models underlying MOOC provision, going beyond paid certification to include other approaches to the generation of revenue, such as content subscription models and the combination of individual courses into larger study programmes such as nanodegrees and micromasters, where students are prepared to pay.
- Better understanding of how learning actually happens in MOOCs and online environments in general, what problems are still left to solve and how data analytics can help in this process.
- The attention being received by work on course recognition, accreditation and certification and how MOOCs can be designed and developed to maximise such endorsement.

One of the social groups that has been specifically targeted by MOOC providers in the last few years is that of displaced people, i.e., refugees and migrants (Colucci, Castaño Muñoz & Devaux, 2017). Both publicly funded research projects (e.g., MOONLITE; www.moonliteproject.eu), European institutions, UNESCO and COL (Patru & Balaji, 2016) and private entities (e.g., Kiron; https://www.kiron.ngo/) have targeted this sector of the population, that might not ordinarily be able to reach the types of training and education they need to achieve social inclusion and access to the employment market. MOOCs might represent an important tool for helping refugees and migrants if they are developed and deployed in an adequate and inclusive manner. Colucci et al. (2017) argue, based upon an analysis of the courses that they have undertaken, that an important factor in their effectiveness is the way in which they are applied, highlighting those that mix online and face-to-face groups (in a blended approach) and those that provide support and mentoring services. Read, Sedano & Barcena (in press) argue for the involvement of refugee support groups in the development and facilitation of MOOCs and identify a set of criteria specific for refugee and migrant participants that need to be directly addressed in a MOOC in order for it to be effective for this group. These criteria reflect a series of areas, namely: technology, methodology, language, culture and policy, which are currently being applied in real courses.

The research community has by no means accepted MOOCs as the end of the evolutionary process for open education. Authors such as Ferguson, Sharples & Beale (2015) and Dos Santos, Punie & Castaño-Muñoz (2016) argue that the acronym will gradually stop being used as new research on the online teaching and learning help us to better understand the underlying (meta-)cognitive and information processing, so that new learning tools, strategies and scenarios will be developed that make the use of the acronym MOOC largely irrelevant.

One of the most active areas within MOOC research is that of understanding how learning actually takes place in these courses, what resources affect engagement, how students can be scaffolded to improve their learning, and how courses can be designed to promote this process (e.g., Barcena, Martin & Read, 2015; Margaryan, Bianco & Littlejohn, 2015). However, understanding how learning takes place in MOOCs is not as easy as expected, since data on, for example, completion rates, do not necessarily reflect what learning is taking place and students may be independent and interact with the resources and activities in terms of their own motivations and goals and not those of the course designer (de Boer, Ho, Stump & Breslow, 2014) or follow the course without attempting to learn from it! Recent studies show that the completion rates are not a measure of success in the context of MOOCs and that MOOC-takers' perspectives should be taken into account (Henderikx, Kreijns & Kalz, 2017). Based upon an analysis of previous research, Daradoumis, Bassi, Xhafa & Caballé (2013) argue for the need for interaction and collaboration to be included in MOOCs, together with support mechanisms and strategic feedback received in a timely manner both from peers and instructors. Also, a recent study by the Open University reveals that collaborative learning activities, such as discussion forums and online tuition sessions play a key role in motivating students to successfully finish a course (Rienties, 2018).

Another emergent feature in the design and application of MOOCs is the use of learning analytics for the identification of student progress/failure (e.g., Tabaa & Medouri, 2013), something that will gain importance as time goes by.

It has been said colloquially that there is no such thing as free, since someone, somewhere, somehow is paying the costs of whatever we do. MOOCs are no exception. In the early days, as was noted above, these courses were presented as open learning experiences, the emphasis being placed on their availability for students, and the associated pedagogic aspects, and not so much on the economic ones, of how the costs of developing and running them would be met. The business model was, albeit initially, left as something that needed to be developed later. These costs can be compared to those of putting half-page advertisements in prestigious newspapers. Ivy League universities can justify the cost of these courses as exercises in branding and publicity, since any students attracted to study at these institutions will pay significant fees, which will help to offset the cost of the MOOCs. However, most universities (and companies) are not fortunate enough to be in this position and require a revenue stream to come from these courses, to compensate for the costs of running them.

The first attempt to generate income came from paid certification. Students would be able to undertake a course, access all the materials and activities and take the tests available throughout the course, but the final overall evaluation, that would give the student a certificate, would have a small cost. While the search for the perfect business model for MOOC providers is still very much ongoing, a lot of progress has been made since the early days. Firstly, different types of content subscription models are appearing, where students can maintain their access to the courses they have undertaken when they are over, by paying a fee (e.g., Futurelearn, https://goo.gl/JN7aUc; Coursera, https://goo.gl/WN7wqt). Secondly, MOOCs are being combined into larger programmes such as nanodegrees and micromasters, which is causing the number of paying students to increase (Shah, 2017). Thirdly, MOOCs are playing an increasing role in corporate training (e.g., Coursera had more than 500 companies signed up in 2017, and EdX for Business, more than 40; Shah, 2017). Finally, as Obrist & Jansen (2018) note, the diversity of MOOCs and related academic and commercial entities make it difficult to identify and apply a single business model. Beyond the desire to recover direct costs (related to course development and deployment), and monetize the educational process where possible, there are a series of different operational and contextual levels where business models can exist. Such models emphasize different economic, sociocultural, and political dimensions. They can be used, for example, to justify costs and offset them against others (such as institutional brand awareness and marketing), meet social needs (important for different governmental funding agencies), and extend existing educational models to attract new clients (complementing on-campus courses with online ones).

A key issue with these courses is that of course recognition, certification and accreditation. Gaebel (2014) notes that the long-term effect of MOOCs in higher education will be limited if no credits are given for courses! Witthaus, Inamorato dos Santos, Childs, Tannhäuser, Conole, Nkuyubwatsi & Punie (2016) present an analysis of the assessment and recognition of (non-formal learning in) MOOCs, noting that only a small subset of MOOCs currently provides credits. However, this situation has changed since that publication. Shah (2018) highlights 370 MOOCs from 49 universities that offer credits. Furthermore, as noted above, such courses are beginning to be combined to form different short learning programmes and even full online programmes.

Witthay et al. subsequently highlight six aspects of the development and deployment of MOOC that will be key for future recognition, namely: identity verification, supervised assessment, informative (digital) credentials, quality assurance, awarding credit points, and partnerships and collaboration with certification institutions or bodies. Finally, no article on current trends in MOOC research and application would be complete without a mention of course quality models. A plethora of publications have appeared on this topic, ranging from platform specific approaches (Read & Rodrigo, 2014) through to more general ones that can be used to ensure homogeneity across MOOCs (Jansen, Rosewell & Kear, 2016; Rosewell & Jansen, 2014). Innovative research on quality issues will be key not only in discerning and shaping better MOOCs but in enabling online education to fulfil its full potential in the ever changing international educational scenario where it belongs, as a premise for progress, equality and hope.

# References


Anders, A. (2015). Theories and applications of massive online open courses (MOOCs): The case for hybrid design. *IRRODL*, *16*(6). https://goo.gl/ehtHbM

Barcena, E., Martin, E., & Read, T. (2015). Potentiating the human dimension in Language MOOCs. *Proceedings of EMOOCs 2015*, 46-54.

Colucci, E., Muñoz, J. C., & Devaux, A. (2017). MOOCs and Free Digital Learning for the inclusion of migrants and refugees: A European policy study. https://goo.gl/WY1K8t

Conole, G. (2013). MOOCs as disruptive technologies: strategies for enhancing the learner experience and quality of MOOCs. *RED, Revista de Educación a Distancia, 39*. https://goo.gl/iLWJ7C

Daradoumis, T., Bassi, R., Xhafa, F., & Caballé, S. (2013). A review on massive e-learning (MOOC) design, delivery and assessment. In *P2P, Parallel, Grid, Cloud and Internet Computing (3PGCIC), 2013 Eighth International Conference on*, 208-213.

de Boer, J., Ho, A., Stump, G., & Breslow, L. (2014). Changing "Course": Reconceptualizing Educational. *Educational Researcher, 43*(2), 74-84.

Dos Santos, A. I., Punie, Y., & Castaño-Muñoz, J. (2016). Opportunities and challenges for the future of MOOCs and open education in Europe. https://goo.gl/DctKcF

Ferguson, R., Sharples, M., & Beale, R. (2015). MOOCs 2030: a future for massive open online learning. https://goo.gl/XoFHCA

Gaebel, M. (2014). MOOCs Massive Open Online Courses. *European University Association*. https://goo.gl/X97eZG

Gasevic, D., Kovanovic, V., Joksimovic, S., & Siemens, G. (2014). Where is research on massive open online courses headed? A data analysis of the MOOC Research Initiative. *IRRODL*, *15*(5). https://goo.gl/oP71Br

Henderikx, A.M, Kreijns, K., & Kalz, M. (2017) Refining success and dropout in massive open online courses based on the intention–behavior gap, *Distance Education, 38*(3), 353-368. https://goo.gl/Q9KLKx

Israel, M. J. (2015). Effectiveness of integrating MOOCs in traditional classrooms for undergraduate students. *IRRODL*, *16*(5). https://goo.gl/WsMMoG

Jansen, D., Rosewell, J., & Kear, K. (2016). Quality Frameworks for MOOCs. In M. Jemni, Kinshuk & M.K. Khribi (Eds.), *Open Education: from OERs to MOOCs*. Lecture Notes in Educational Technology (LNET). pp. 261-281 Aug 18, 2016. Berlin: Springer. https://goo.gl/SXt2Fp

Koller, D. (2012). How online courses can form a basis for on-campus teaching. https://goo.gl/e1wU5B

Margaryan, A., Bianco, M., & Littlejohn, A. (2015). Instructional Quality of Massive Open Online Courses (MOOCs). *Computers & Education, 80,* 77-83.

Obrist, M. & Jansen, D. (2018). Existing MOOC business models. BizMOOC Discussion paper 8. https://goo.gl/dp2gjQ

Patru, M., & Balaji, V. (Eds.) (2016). Making Sense of MOOCs: A Guide for Policy-Makers in Developing Countries. UNESCO and Commonwealth of Learning. https://goo.gl/1WL7uK

Read, T., Sedano, B. & Barcena, E. (in press). Tailoring Language MOOC design for migrants and refugees. In *Proceedings of TISLID'18*.

Read, T. & Rodrigo, C. (2014). Toward a quality model for UNED MOOCs. *eLearning Papers 37*. https://goo.gl/oiHLw5

Rienties, B. (2018). The power of learning analytics to give students (and teachers) what they want! Inaugural lecture, The power of learning analytics for a better study experience. 30 January 2018, Milton Keynes, Open University UK. https://goo.gl/gCsHke

Rosewell, J., & Jansen, D. (2014). The OpenupEd quality label: benchmarks for MOOCs. *INNOQUAL: The International Journal for Innovation and Quality in Learning*, *2*(3), 88-100.

Shah, D. (2017). A Product at Every Price: A Review of MOOC Stats and Trends in 2017. Class Central. https://goo.gl/6xAE3y

Shah, D. (2018). 370 Online Courses With Real College Credit That You Can Access For Free. Class Central. https://goo.gl/qAzTfH

**Adam Lapworth**

***UniMOOC - Universidad de Alicante***

# Trends towards a sustainable MOOC Platform

## Innovative impact

The impact these innovations and trends have is on the e-learning community as a whole. If we do not address the sustainability issues MOOC platforms are having, this learning method will not be seen as a viable option, requiring large amounts of investment to remain functional.

The increase in availability and the reduction in size of online courses allow for more students from different sectors (not just higher education students) to enrol and complete courses, meaning more and more people can learn and receive recognition for their knowledge in specific topics. MOOCs are becoming a good way for those not previously involved in education to gain access to information, training and in most cases accreditation, as well as for older target groups to update their professional knowledge.

## Introduction

Since finishing my degree as a Computer Engineer at the University of Alicante, I have been working at UniMOOC, one of the first and biggest Spanish language course platforms, developed by the Institute of International Economics of the University of Alicante. In my experience with MOOCs (Massive Open Online Course) and developing MOOC technology for the last two years I have noticed a variety of trends. The majority of the recent trends when developing technology for MOOC platforms consist in making the platform cost efficient. This can be accomplished by reducing overall costs while improving revenue models. In this paper I will discuss these trends from the perspective of MOOC platforms that do not receive any external funding, either from governments or institutions. UniMOOC for example, does not receive any funding, so we have had to adopt new changes to become sustainable.

## Changes in offerings at MOOC platforms

It is estimated that to date, more than 800 universities worldwide have launched at least one online course, with over 9000 announced MOOCs (from Class-Central, Jan 2018), although this figure excludes all of the courses hosted on institutional platforms (from Moonlite, 2017). Although there has been a reduction in growth of new learners, the number of paying users has increased. This could be due to the fact that MOOC platforms are changing their business models to try and increase the number of paying users in their quest for sustainability.

There has been a growth in nano-courses or NOOCs (Nano Open Online Course), due to the fact that they promote the exploration and learning of a specific element and are therefore more interesting for students wanting to specialize in a certain specific topic. This model also increases monetization, allowing platforms to charge for the content of each nano course and for certificates that recognize the completion of various nano courses.

Another trend, opposite to the mentioned above, is to offer a series of courses as short learning programs, nano-degrees or micro-masters. These series of courses give access to a new market niche, generating more revenue for both platforms and institutions.

Both of these trends make it very easy for MOOC platforms to generate more revenue with the courses they already have. By re-using content

## Best practices

MOOCs (Massive Open Online Courses) are continuing to grow, but one of the main issues MOOC platforms are facing is finding a sustainable revenue model. Many platforms rely on investment to keep afloat, and many of the new MOOC platform trends try to remedy this. Courses are being made shorter, structured differently and open for longer periods of time and more often, and different monetization approaches are being used to increase revenue. These changes must take place for MOOC platforms to become sustainable and viable without funding.

and dividing up courses or by joining up existing courses to create a nano-degrees, platforms are able to re-market their valuable (and already paid for) content.

We have also seen a growth in academic webinars or online conferences, with platforms developing new technologies to allow for massive online video streaming on their sites. This methodology, in my opinion, limits the reach a course can have because it sets a specific time all students have to be connected to be able to take part in the webinar (not to mention issues with time zones, and the server stress and cost to allow for large scale video streaming). This method does however allow for higher monetization if users are made to pay to attend the webinar, due to the fact that the student is communicating directly with the teacher or specialist, in some cases even getting one-on-one tutoring, as well as improving interaction and gamification between students.

# MOOC Structure

Many of the first MOOCs (especially at UniMOOC) had a more rigid structure, with a strict timetable, opening modules or lessons each week for students to follow. This model has been adapted to a more dynamic methodology to increase availability, keeping all content open from the start of the course. The availability of on-demand lesson videos and automatic or peer-reviewed marking has removed the need for such inflexible schedules.

Greater flexibility is also achieved by having the course open continuously. Originally, courses were available only at set times. If students missed the enrolment period, they missed out altogether on the course. Now, courses are available on a rolling timetable so it can be easier for the user to find time to enrol and finish the course. In some cases this means not having the courses directly guided by teachers, because most teachers have not got time to be dedicated to managing courses on a rolling timetable.

The assessment methods have also changed over time. Most early courses only allowed the assessment to be taken once or twice, now students can repeat the assessments multiple times, using a battery of randomized questions and options. This allows students to come back to the modules they have failed at a later date to complete the course.

Having tested various different MOOC assessment methodologies on our platform, I have found the most simple to work best (randomized questions battery, peer-reviewed assessments and teacher corrected essays). Many of the assessment models that we have tried haven't worked as well as planned (cMOOC methodology, peer-rated assessments, multiple static quizzes), mainly because of the difficulties of working with such a large number of students.

# MOOC Monetization

The most important trends I have noticed recently is due to the struggle MOOC platforms are having creating sustainable revenue models, when not funded by governments or (network) of higher education institutions. Platforms are trying all sorts of new ideas to try and monetize their content and services. From the original financial model of paying for access to an online course, we have now ended up with platforms paying the students to complete the course. With course completion rates so low, some platforms have found ways of encouraging students to continue with their courses and complete them by awarding their own credits to users when they complete course modules. These credits can then be re-used on the platform to purchase other online courses. Other business models include using the blockchain philosophy with a virtual currency to pay students for completing their courses. The use of NOOCs and short course programs also increase completion rates, allowing students to spend less time learning before completing the course. This subsequently increases revenues as well, if more courses are finished, more completion certificates can be sold, and students are more motivated to continue learning additional courses.

Originally, online course platforms monetized their content either by offering their courses for free and requiring the student to pay upon completion to receive recognized credits, or by charging for access to each course at the beginning (although charging for an open course sort of takes the meaning out of MOOC). At UniMOOC we started with the latter, where users would pay to access the course content and would automatically receive a certificate upon completion. As other platforms have done, we have been finding new ways to become sustainable, and now use three different monetization models for our courses. We still use the original pay-for-everything model for some of our courses, as it still works well for traditionally structured MOOCs. We have developed a new freemium model where students can access the content of nano-courses (two or three modules) for free, and can then pay to access more in-depth content (an additional three or four modules). As well as these two models that monetize the course content, we are turning towards having all content open and monetizing certificates for specific sets of modules related to short programs. These certificates can be either digital or printed and sent, and can recognize the completion of just a few modules, the whole course, or a set of topic-related modules across courses.

UniMOOC does not receive funding from any external entity, which is why we consider creating a sustainable revenue model to be so important. Many MOOC platforms are struggling with this and need the backing of governments and other institutes or companies to keep afloat. I believe some of the recent trends elaborated in this paper can help solve this.

# Conclusion

To conclude, we could agree that most of the new MOOC platform trends consist in increasing revenue and improving sustainability, either by attracting paying users to our sites or by finding new revenue models. At UniMOOC we have been sustainable for the last year after developing better technology, reducing server costs by 76%, and using new revenue models to increase the number of paying users. We have started to create smaller, topic specific and easier to complete courses that are more available to students over a larger time period. The use of different levels of certificates (for whole courses, for various courses, and for specific course modules) allow students to better certify their knowledge and allow online course platforms to reap the benefits. All of these changes are helping to make MOOC platforms more sustainable and available, and are therefore helping online courses become a viable learning method.

**Cengiz Hakan AYDIN**

***Anadolu University***

# MOOCs as Change Agents

## Innovative impact

A big majority of the participants are actually students in face-to-face and ODL programs in Anadolu University and other higher education institutions. Namely, current students are more interested in participating MOOCs in Turkey with the intention of performing better in their regular classes and also acquiring employability skills. AKADEMA has shown that MOOCs can be used for faculty development and testbed innovative pedagogies. Also, MOOCs can be used as social support means in ODL degree programs.

AKADEMA helps Anadolu learn more about Turkish lifelong learners. It also provides some hints about how Anadolu can transform its traditional ODL system into a technology-based learning system.

## Introduction

Anadolu University has been one of the open and distance learning (ODL) providers since early 1980s, same as many other open universities established after the success of Open University of UK. Currently, Anadolu has been offering higher education degree and certificate programs to one million active learners in different fields. Anadolu's dual-mode organization is its one of the major differences from other open universities in the world. In other words, Anadolu does not only offer ODL but also traditional on-campus education too.

As it has expressed in its vision and mission statements, Anadolu has always been in search of finding new ways to work on enlightening and empowering those who need education. Massive Open Online Courses (MOOCs), which are actually just a different form of ODL courses Anadolu and many other open universities have been offering for years, are considered as another way of reaching its mission. So, a MOOCs project, entitled as AKADEMA, has launched in 2014 with four courses and active participation of 2500 learners. In May 2018, the number of courses reached 58 and served to 28.000 single users. At start increasing the visibility was declared as the main motive of the University for offering MOOCs. However, the University has been using its MOOCs to show the decision makers and in general public that courses in science, health, sports, music and other areas can also be taught effectively at a distance, and learners can acquire affective and psycho-motor skills as well as cognitive ones via ODL. There is a common belief that courses in these fields and addressing these skills cannot be taught at a distance but AKADEMA has proven that it is possible with right instructional strategies.

Following sections of this short paper provide an insight about the AKADEMA statistics, instructional, assessment and managerial strategies employed in these courses, and trends Anadolu wants to follow based-on the lessons learned.

## Statistics

AKADEMA, as mentioned earlier, has started with 4 courses in 2014 and gave the first graduates in 2015. These four courses were all 8-weeks long and required a guided study. Due to administrative issues, these courses were terminated in 2016 and a new set of courses were developed. The first four courses were created by using the already available materials, but later ones included materials specifically designed and produced by the course instructors. The instructors, professors from Anadolu, were provided a set of templates, guidelines

## Best practices

Here are some lessons Anadolu learned through AKADEMA courses for the MOOCs providers and designers:

The shorter the better. Keep courses maximum 6 weeks to get better retention.

Use MOOCs as faculty development tool. Intense guidance, support, templates, examples, etc. during the beginning (scaffolding) help faculty acquire skills for effective teaching.

Including formative assessment (e.g.; grading the learners actions into learning environment, etc.) is a more valid and reliable way of identifying learners' achievement.

Designing courses in a modular way and addressing each module with a specific set of learning objectives helps to implement competency-based education.

and manuals about how to design learning activities, produce materials, and develop assessment ideas, teach online, create a course environment in the learning management system, use YouTube to publish videos, and run a course in the LMS. As a result, the number of courses offered in AKADEMA increased fast and reached to 60 in 2017. Later, because of the quality issues two courses were cancelled in 2018 (Figure 1).

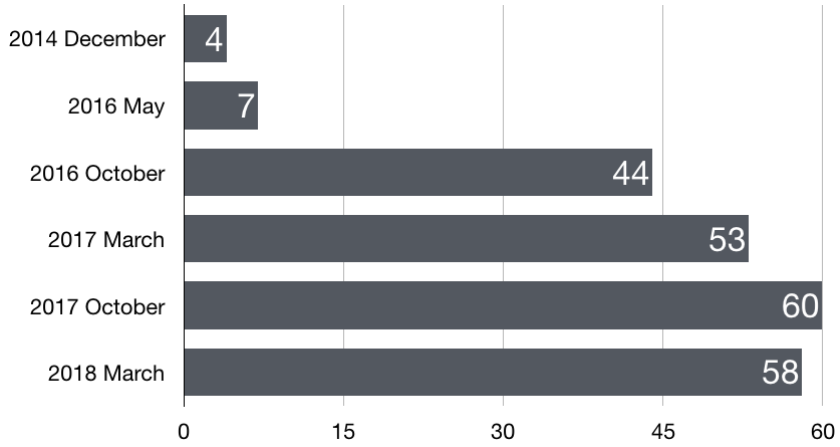



*Figure 1: Number of courses*

As can be observed in Figure 2, enrolment number to the courses is increasing gradually but considering the other major MOOCs providers' numbers it is not expected level. This may be due to language (AKADEMA courses are mainly in Turkish) and lack of publicity. Meanwhile the completion rates vary between 3.5 percent and 7.3 percent. This is quite aligned with the global trend.

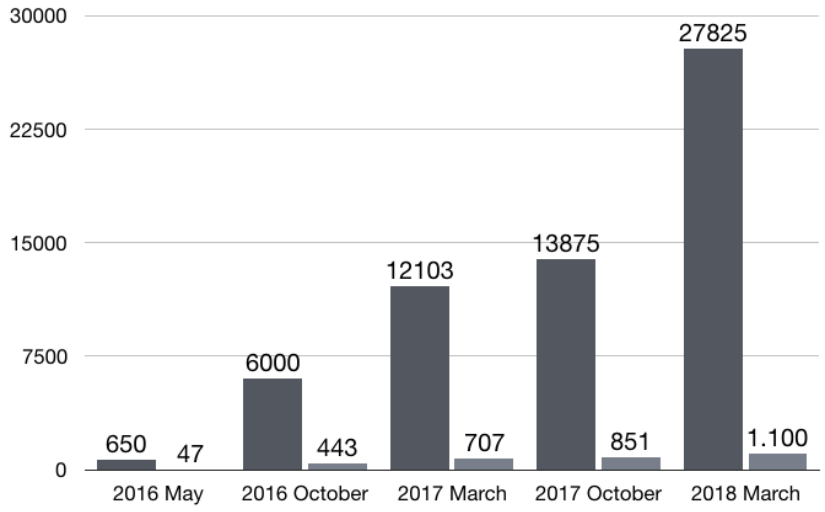



*Figure 2: Number of enrolments and completions*

The enrolments have also shown that almost 70 percent of the participants were actually students in either face-to-face or ODL programs in Anadolu and other institutions. A survey conducted to learn the participants' preferences and characteristics also supported this

finding. In this survey, the participants identified the 'To get a support for their regular classes' as one of the top five motives for participating AKADEMA courses.

Figure 3, on the other hand, shows that AKADEMA participants mostly prefer personal development courses, such as effective communication, body language, effective time management, financial literacy, etc.

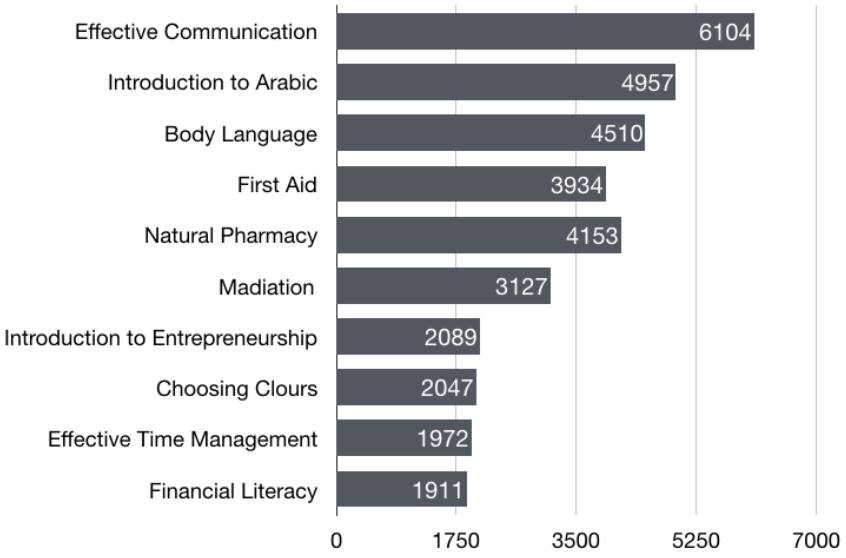



*Figure 3: To course preferred by the participants*

# Instructional, Assessment, and Implementation Strategies

AKADEMA courses are designed in xMOOCs type where the content divided into modules each of which targets specific learning outcomes. An activity-based approach has been employed throughout the courses and modules. In other words, the modules consisted of activities, each addressing a specific learning objective. Each activity required learners complete some steps. For instance, in an activity in the *Lets Learn Cello 1* course, the learners have to read the introductory text as a first step, then watch the video created by the instructor in the second step, later they have to try the actions shown in the instructor's video and shot a video of themselves and sent it to the instructor. In the next step they have to watch/listen/read the instructor's comments on their video. The last step of the activity includes reflection of the learner on that specific activity. Due to limited number of enrolments and retention in many courses, the instructors were able to provide individualized feedback to the learners. In some others, the instructors required to provide general feedback including some quotes from the students' postings. The course length varied from three weeks to eight weeks.

The assessment strategy for each course left to the course instructors but they were provided guidance about alternative assessment methods and tools for online learning. At the end, only three instructors used exams and a big majority used only formative assessment based-on the learners' performance in activities.

The courses were designed in a way that each required minimum 25 hours of study time. It is aligned with ECTS. In other words, actually those who complete AKADEMA courses earns 1 ECTS. However, Turkish higher education institutions including Anadolu, currently, do not recognize the certificates earned in MOOCs but it will most probably change soon, and the learners will be able use these credits in their regular courses and programs. Also, in order to reach more audiences AKADEMA courses are created in open education resource format. Namely, the courses are open 24 hours 7 days year around. Learners can access anytime they want, complete the

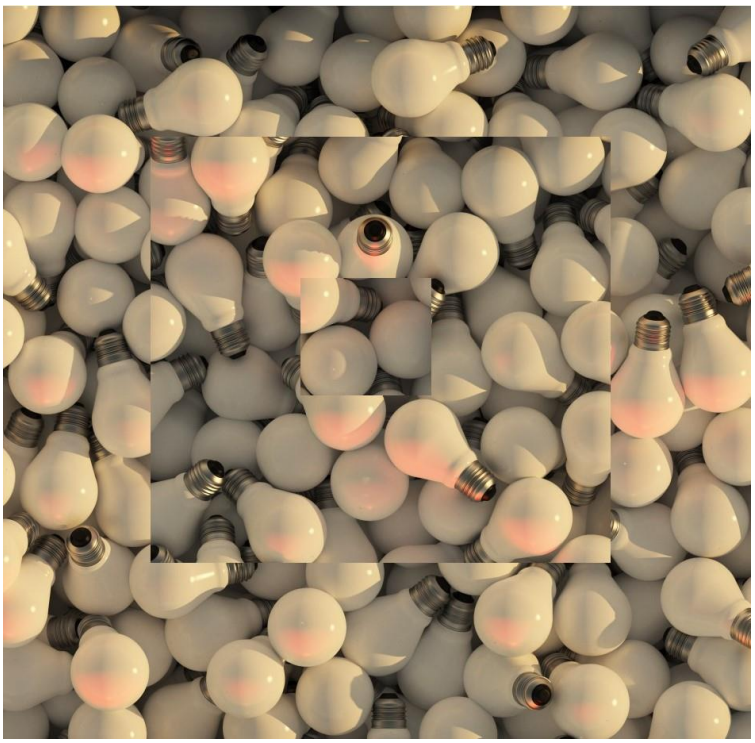
assignments, use the learning materials and learn. There is no restriction except a simple registration process. The course materials are licensed with Creative Commons CC BY-SA. So, anybody can access, download and re-use these materials. On the other hand, those who want to have a certificate needs to complete the activities during the specific times and interact with the instructors and other participants.

# Conclusion

AKADEMA has revealed several important experiences that can be transferred into Anadolu University's ODL courses and programs. Here is a list of these implications:

- With a proper design any subject or skills can be taught via online education, including science, health, music and sports.
- MOOCs can be a safe and appropriate mean for training faculty to teach online. These courses can be used as testbed environment for instructors to use new pedagogies.
- There are other and more effective ways to assess the learners. Formative assessment is more effective than just summative one.
- Current learners are performing better in shorter and more condense courses rather than 14 weeks long courses.
- MOOCs can be used as a social support mean in regular ODL programs.

Anadolu University is planning to continue offering MOOCs. However, rather than quantity, Anadolu wants to focus on quality in its MOOCs. While it is a social responsibility project, Anadolu would like to use MOOCs to transform its traditional ODL courses and programs into online courses. So, next cycle of courses, in October 2018, will include different online pedagogies (including rhizomatic learning, experiential learning, hypothesis-based learning, etc.), new technologies (VR, adaptive learning environment, gamification, etc.) and new topics.



**John Traxler**

***University of Wolverhampton***

# Community MOOCs – Back to Basics, Back to the Future

## Innovative impact

The short-term and long-term impact of the community MOOC format depend on the wider contexts of learning. Many reviews of higher education globally point to an increasingly competitive corporate (or quasi-corporate) environment (Altbach et al 2009; British Council 2017; Clegg et al 2003; Deloitte 2014; University of Oxford International Strategy Office 2017; Vaira 2014), to the increasing globally hegemony of anglophone publishers, telecoms and infrastructure corporations and to the consolidation of a neo-liberal or consumerist ideological zeitgeist (Ball 2012; Hill 2003; Apple 2001). If there is a place for the community MOOC in this largely hostile environment, it is at the margins, with the marginal, preserving community involvement, concerns, values, languages and cultures but perhaps helping to preserve some diversity and dissent in what might otherwise be an edtech monoculture.

## Introduction

In this piece, I argue that the MOOC has often moved dramatically away from its innovative and imaginative connectivist origins and I argue that there is an unhelpful tension between 'free' and 'open' resources. This piece explains these profoundly important issues and introduces the idea of community MOOCs as the necessary convergence and solution.

So, to set these positions out in more detail,

## MOOCs, cMOOCs & xMOOCs

The idea of the MOOC was born out of experiences with large open distance learning courses in higher education that suggested a new pedagogy, where the numbers and connections would create a new learning paradigm, called connectivism (Siemens 2005). The subsequent story of the MOOC is however not straightforward (Moe 2015).

The idea of the MOOC has, in the eyes of many people, become however co-opted by formal institutional perspectives and purposes, and now has been transformed into a highly interactive media-rich experience broadcast by universities on a small number of specialised and dedicated platforms such EdX, Coursera and FutureLearn. The early idealism of the *wisdom of the crowd* has been replaced by a globally competitive and corporate ethos (Hill & Kumar 2012) but the MOOC in its different incarnations has much to offer learning. This dichotomy has subsequently been expressed as the division between cMOOC and xMOOC respectively, xMOOc being the eXtended MOOC based on traditional university courses, cMOOC being the Connectivist MOOC based on original pedagogy (Ping 2013), and more recently as a recognition of continued diversification (Kennedy 2014; Bayne & Ross 2014; Conole 2014)

I am advocating the continued development, exploration and evaluation of the community MOOC approach based on this early idealism as part of an antidote to some of these obvious current trends.

## MobiMOOC

I use MobiMOOC (de Waard *et al* 2012) as my prototype and exemplar. A team of six facilitated both of the two runs of MobiMOOC from 2nd April to 14th May 2011. MobiMOOC, a six-week MOOC format course on mobile learning, was organized by Inge de Waard, who remained present throughout the course. There was a second run that built on an

## Best practices

As for best practices, it is clearly inappropriate to be prescriptive, certainly not a low level, but the high level practices must build on respect, flexibility and sharing.

I recognise the convergence with the ideas of rhizomatic education (Cormier 2008) and wildfire learning (Engeström 2009) and these may contribute to the theoretical foundations as experience accumulates.

evaluation of the first run and incorporated successively more choice as participants moved from week to week. The course was free to anyone interested in the topic of mobile learning (mLearning) and learning with mobiles. After completion of the course, the content, as well as all the threads, was available via open source content resources. Although most resources offered by the facilitators and participants were openly accessible online, some of the academic resources, such as peer reviewed papers in academic journals, were behind pay-walls.

MobiMOOC was offered over a course of six weeks with each week organized thematically and facilitated by leading mobile learning researchers and practitioners. The MobiMOOC included an introductory session to MobiMOOC, mobile learning planning, mobile learning for development (M4D), innovations in mobile learning, interaction between mobile learning and a mobile connected society and mobile learning in K-12 environments. All the facilitators were *guides-on-the-side*, each putting forward as many learning actions and follow-ups as they wanted; each of these facilitators was voluntary engaged in this course. All participants, including the facilitators, were free to receive new information and construct new knowledge that fit their own personal mobile learning needs. As such, participants were in charge of their own learning. The participants were able to get information that was relevant to them by asking the entire group for their insights.

Analysis of participation suggested three categories for learner participation, namely lurking participants who just followed the course, looked at the recordings, and browsed the available course resources, thus getting some idea of mobile learning, and implicitly to the emerging practices of community-driven learning; moderately active participants taking one or two topics and engaged in the conversation with everyone involved, thus developing more in-depth knowledge in some topics of mobile learning and exchanging notes and expertise, getting answers to questions other participants may have had; memorably active participants who had participated in at least five of the six topics and developed a mobile learning proposal in their area and received peer and expert help. A template for the individual project was provided but it was clearly communicated that the writing of the proposal would be done by each of the participants. Memorably active participants received a certificate of participation. The end-result was a course with a wide variety of participants and levels of participation.

By 14 May 2011, the end of the first iteration of the course, there had been: 556 participants joining the Google Group, of which 13.3% were active members (defined as posting at least one message in addition to their introduction); 1827 discussion threads were started; 1123 tweets sent with the #mobimooc hash tag; 335 mobile learning-related links shared on the social bookmarking site Delicious; 43.2% of the active participants (n=32) completed the course as memorably active participants; and 53% of the active participants (n=40) completed the end of course survey.

# The Pedagogy & Technology

I have subsequently been formalising the approach with design workshops in universities in Kenya, South Africa, Hong Kong, Sweden, Palestine and elsewhere. The technical approach is to exploit a flexible combination of universally available, highly familiar, mobile-accessible 'free' or sometimes 'open' platforms; the pedagogic approach is derived from connectivism, curation and heutagogy, and aims to encourage active learning, content creation, community building, critical participation, digital literacy and lifelong learning (Farrow 2015). This approach combines the technical and pedagogic scalability of the MOOC with learner empowerment and agency, and cultural flexibility and sensitivity within the relevant constraints of infrastructure, access and connectivity.

It would be possible to test the inclusivity of any given design against use cases derived from, for example, archetypes, say the 'digital resident' / 'digital visitor' spectrum (White & Le Cornu 2011), against the variety of 'learning styles' (Coffield *et al* 2016) and against the various dimensions or characteristics of culture, as expressed by, for example, Hofstede (2011).

The MobiMOOC course and subsequent design workshops revealed the virtues of 'free' software and systems (We use 'free', quote/unquote, as *there's-no-such-thing-as-a-free-lunch* and 'free' systems and software are the property of global corporations like Google and Facebook; learners using such systems should be warned, "You're Not the Customer. You're the Product."). These virtues included familiarity and confidence, and no training overhead. This is obvious when we consider the candidate systems could include Facebook, Twitter, Instagram, Zotero, Diigo, Joomla, Flickr, Skype, Google, YouTube and WordPress. This is the antithesis of 'open'; I argue that open tools, systems and content are mostly the domain of formal institutions and education professionals, bogged down in standards debates and meta-data specification whilst 'free' is easy, popular and social. I argue that an indirect benefit is that of increased social inclusion, both at an individual level and at a cultural level (since the format adjusts to the different types of infrastructure, access and experiences in different communities).

# The Principles

Two of the principles implicit in the MobiMOOC or community MOOC were heutagogy, or self-directed learning (Blaschke 2012), and the curation or orchestration of resources (Botticelli *et al* 2011). The community MOOC format is essentially self-directed. Further pedagogic improvements would be possible by increased alignment with the heutagogy community. It is also self-evidently part of the curation or orchestration movement, which grows out of recognition of the abundance of digital resources, albeit mostly in the languages and values of the global North. Again pedagogic improvements will become likely as the curation movements develops transferable heuristics, building on social book-making tools and social bibliographic databases. There should however be greater recognition that these digital resources include not only digital content but also digital communities and digital tools.

Another principle that emerges is that of active learning with user-generated content (Lee & McLoughlin 2007), meaning not only can users gain agency, control and self-confidence by contributing, by uploading, their own images, ideas, information and opinions, but there is also the possibility of increased meta-cognition and critical capacity by facilitating the commenting, reviewing and rating each other's contributions. This can sometimes be formalised or 'badged with systems modelled on Goodreads, Amazon, TripAdvisor and Wikipedia, which have already given learners experiences of rating, reviewing and editing.

The most profound virtue of the community MOOC format is the extent to which it enhances learners' digital literacy (Bawden 2008), that is their capacity to flourish and prosper as lifelong learners in a world of chaotic digital abundance (Ala-Mutka *et al* 2008; Martin & Grudziecki 2006).

# References


Apple, M. W. (2001). Comparing neo-liberal projects and inequality in education. Comparative education, 37(4), 409-423.

Ala-Mutka, K., Punie, Y., & Redecker, C. (2008). Digital competence for lifelong learning. Institute for Prospective Technological Studies (IPTS), European Commission, Joint Research Centre. Technical Note: JRC, 48708, 271-282.

Altbach, P.G.; Reisberg, L.; Rumbley, L.E. (2009) Trends in Global Higher Education: Tracking an Academic Revolution; UNESCO: Paris, France

Bayne, S., & Ross, J. (2014). MOOC pedagogy. Massive open online courses: The MOOC revolution, 23-45.

Ball, S. J. (2012). Global education inc: New policy networks and the neo-liberal imaginary. Routledge.

Bawden, D. (2008)Origins and concepts of digital literacy. Digit. Lit. Concepts Policies Pract., 30, 17–32

Blaschke, L. M. (2012). Heutagogy and lifelong learning: A review of heutagogical practice and self-determined learning. The International Review of Research in Open and Distributed Learning, 13(1), 56-71.

Botticelli, P., Fulton, B., Pearce-Moses, R., Szuter, C., & Watters, P. (2011). Educating Digital Curators: Challenges and Opportunities. International Journal of Digital Curation, 6(2), 146-164.

British Council (2017). 10 Trends: Transformative Changes in Higher Education; British Council: London, UK

Clegg, S.; Hudson, A.; Steel, J.(2003) The emperor's new clothes: Globalisation and e-learning in higher education. *Br. J. Social. Educ*, 24, 39–53

Coffield, F., Moseley, D., Hall, E., & Ecclestone, K. (2016). Should we be using learning styles—what research has to say to practice. The Learning & Skills Research Center UK. 2004.

Cormier, D. (2008). Rhizomatic education: Community as curriculum. Innovate: Journal of online education, 4(5), 2.

Conole, G. (2014). A new classification schema for MOOCs. The international journal for Innovation and Quality in Learning, 2(3), 65-77.

Farrow, R. (2015) Open education and critical pedagogy, Learning, Media and Technology, 42:2, 130-146,

De Waard, Inge, Apostolos Koutropoulos, Rebecca J. Hogue, Sean C. Abajian, Nilgün Özdamar Keskin, C. Osvaldo Rodriguez, and Michael Sean Gallagher. Merging MOOC and mLearning for increased learner interactions, International Journal of Mobile and Blended Learning (IJMBL) 4:4:, 34-46.

Deloitte (2014). Higher Education is Evolving; Deloitte LLP: Fredericton, NB, Canada.

Hill, D. (2003). Global neo-liberalism, the deformation of education and resistance. Journal for critical education policy studies, 1(1), 1-30.

Hill, D., & Kumar, R. (Eds.). (2012). Global neoliberalism and education and its consequences. Routledge.

Engeström, Y. (2009). Wildfire activities: New patterns of mobility and learning. International Journal of Mobile and Blended Learning (IJMBL), 1(2), 1-18.

Hofstede, G. (2011). Dimensionalizing cultures: The Hofstede model in context. Online readings in psychology and culture, 2(1), 8.

Kennedy, J. (2014). Characteristics of massive open online courses (MOOCs): A research review, 2009-2012. Journal of Interactive Online Learning, 13(1)

Lee, M. J., & McLoughlin, C. (2007). Teaching and learning in the Web 2.0 era: Empowering students through learner-generated content. International journal of instructional technology and distance learning, 4(10), 21-34.

Martin, A., & Grudziecki, J. (2006). DigEuLit: concepts and tools for digital literacy development. Innovation in Teaching and Learning in Information and Computer Sciences, 5(4), 1-19.

Moe, R. (2015). The brief & expansive history (and future) of the MOOC: Why two divergent models share the same name. Current issues in emerging elearning, 2(1), 2.

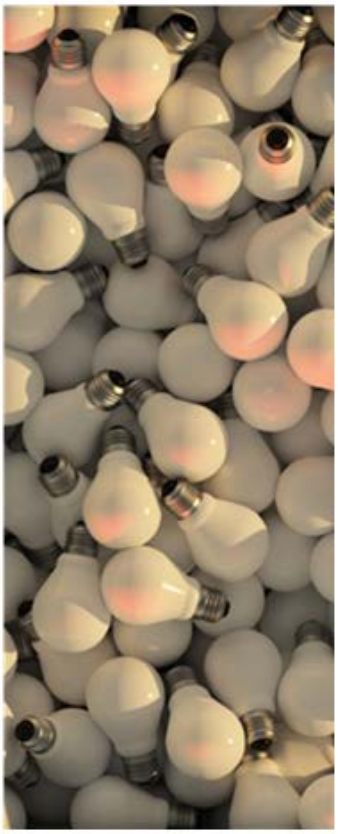
Ping, W. (2013). The Latest Development and Application of Massive Open Online Course: From cMOOC to xMOOC [J]. Modern Distance Education Research, 3(005).

Siemens, G. (2005). Connectivism: A learning theory for the digital age. International Journal of Instructional Technology and Distance Learning (ITDL), January 2005; http://www.itdl.org/Journal/Jan_05/article01.htm

University of Oxford International Strategy Office (2017) International Trends in Higher Education 2016-17; University of Oxford: Oxford, UK.

Vaira, M (2004). Globalization and higher education organizational change: A framework for analysis. Higher Educ, 48, 483–510.

White, D. S., & Le Cornu, A. (2011). Visitors and Residents: A new typology for online engagement. First Monday, 16(9).



**Aquilina Fueyo,**
**Isabel Hevia,**
**Translated by Sara Velasco**

***Innovation Center of the University of Oviedo***

# Creating online learning networks through the Communities of Inquiry

## Innovative impact

This experience shows the importance of the role of teachers in MOOC courses linked to the orientation, the accompaniment, and the provision of resources. This is a constant in University contexts and, also, in these new online training experiences and, in particular, in those of a massive nature

These experiences encourage a critical and high-level learning process through interaction and communication thanks to new technologies. This learning leads students to manage, contextualize and give meaning to information through the personal construction of meanings that is done in an eminently social process.

Online learning facilitates self-directed and creative critical learning because the technical tools are organized with a pedagogical approach. The challenge is to achieve a "deep or high-level learning". In the long term, it provides a reference model for the design of massive online courses based on networked learning.

A flexible and open organization of the content, activities designed to create and empower the community of basic research through social networks, the quality, updating an abundance of resources and material offered, and the technological tools used to ensure a permanent teaching presence, are characteristics that have a positive impact in the short and long-term

## Introduction

The pedagogical challenge of developing MOOC courses (Massive Online Open Course) has generated, in recent years, a wide range of studies and publications that are trying to clarify if we are facing innovative and pedagogical methods, or they are a passing fad based on the new technological advances and linked with the business that can be done with the higher education in online mode. (Vázquez-Cano & López, 2014; Bartolomé & Steffens, 2015; Conole, 2013; Fernández, Rodríguez, & Fueyo, 2014). The MOOC phenomenon has been used to show that university teaching requires changes that allow adapting to the new ways of knowing, learning, and communicating that exist in a hyper-connected society.

The few studies that have evaluated the pedagogical quality of MOOC courses show that, in some cases, they incorporate pedagogical innovations through collaborative networking, the development of personal itineraries for the construction of student learning, etc.; in many other cases they use pedagogical linear models based on transmissive models and on a closed conception of knowledge and learning, that have little or nothing to do with the innovative principles that inspired the first experiences in this field (Valverde, 2014; Flores & al., 2013;Fernández, Rodríguez, & Fueyo, 2014).

Those innovative principles are related to the quality of learning process and the need for interaction and collaboration to be included in MOOCs. A recent study by The Open University, reveals that the best predictor for whether students actually passed a course was whether there were collaborative learning activities, such as discussion forums and online tuition sessions (Rienties, 2018). MOOCs are a challenge in this as they need to provide support and feedback methods for large numbers of students. Kasch, Van Rosmalen and Kalz (2017) identified examples of (potential) scalable support and feedback methods.

Among the different approaches that have been used to study the social interactions in e-learning experiences, one of the most studied is the Communities of Inquiry formulated by Garrison & Anderson (2005). The projection of their model has been considered in the Saxon and Hispanic field (Jeong, 2003; Gairín & Muñoz, 2006; Marcelo & Perrera, 2004 y 2007; Casanova, 2008, etc.). Garrison & Anderson (2005) have studied these communities in their virtual format under the name of Community Inquiry, understood as a group of people who interact in a process of an empirical or conceptual process into a problematic situation for the construction of knowledge.

The analysis of these processes focuses on the interactions that take place in three areas: socialization, teaching, and cognition. In each

### Best practices

The Digital Literacy for groups at risk of exclusion has been carried out within the ECO project in three successive editions, reaching a total of 1,637 people. A series of resource materials have been derived from it, some of which are highlighted below:

**Course materials:**
http://hub8.ecolearning.eu/course /alfabetizacion-digital-para-personas-en-riesgo-de/

**Course videos:**
https://www.youtube.com/channel/UCA_W68xrtO28qZkZN027Irg

**MOOC DESIGN IN ECO PROJECT: "Digital Literacy Experiences for Social Exclusion Groups and Educational Intervention":**
This presentation describes the main elements of the pedagogical model that have been used in the course.
https://prezi.com/cbe0d335yjcn/mooc-design/

**Good practice guide: Dimensions, Indicators and Examples**
This guide allows us to assess the pedagogical and technical quality of MOOCs
http://innouniversidad.unican.es/wp-content/uploads/2014/09/GuiaBPconMOOC.pdf

area, a series of indicators are defined to analyse and design these teaching and virtual learning processes.

### *Procedure and participants*

This study is part of the project «ECO: E-learning Communication and Open Data: Massive, Mobile, Ubiquitous and Open Learning» funder under the programme Competitiveness and Innovation Framework Programme (CIP) of the European Community. Three editions of this MOOC have been done and a total of 1.637 people participated. We selected the second edition of the MOOC, where 497 students and 14 teachers have participated. The research is mixed (quantitative and qualitative) and it is focuses on determining how networked social learning was empowered by the incorporation of technological devices located on the platform OpenMooc and in social networks such as Twitter, YouTube or Pinterest. Asynchronous social network interactions are used for content analysis of the categories and indicators developed in the Garrison & Anderson (2005) model of inquiry communities. Through Atlas ti v.7.1.8, we performed a qualitative analysis of each message categorizing it according to the established dimensions. The results are compared with the final and initial questionnaire. The final satisfaction questionnaire allowed us to know the students 'opinion about the course.

## Analysis and results

The interaction on the MOOC social media has been high; taking into account that participation was not mandatory and did not have an impact on the final evaluation. We identified 845 comments distributed in 24 different threats. We selected a total of 426 comments. Of the total number of messages analysed, 43% belong to social presence, 17% to the cognitive presence and 40% to the teaching presence. The qualitative analysis focuses on the interactions included in the cognitive presence. For this propose, we have determinate the different cycles of cognitive activation that have been produced in the course, identifying seven cycles of cognitive activation of students that are developed around the main activities of each of the six blocks content. We selected units 1 to 4 because their analysis allows us to know clearly the cognitive presence of this community.

The cycles of cognitive activation that have occurred in this community have disparate triggers and use technological resources created or selected "ad hoc" to promote and enhance interactions (videos, films, databases, etc.). Also in each of them, the resolution processes are different in nature, and they are developed using diverse technological tools, different response processes in terms of exploration, integration and the resolution of the proposed activities.

On the one hand, we find Cycles 3 and 4 (table 1) with a similar structure that has focused on the exchange of ideas and reflections in order to activate the knowledge among the members of the group. The main goal is that students interact with basic content such as digital literacy, ubiquitous learning, and social exclusion. These interactions were focused on promoting the acquisition of basic content in the case

of either the participants are new to the subject or increasing their knowledge. On the other hand, the processes that take place in Cycles 5 and 6 (table 1) have a similar structure and their aim is the exchange of ideas and experiences on socio-educational intervention for digital literacy for people at risk of exclusion.

**Table 1. Cognitive activation cycles**

| Trigger even in each Unit | Characteristics of the cycle to which it gives rise | Technological support for cognitive activation |
|---|---|---|
| **Cycle 1: Unit 0-Presentation of the students** | It is social phase that is activated by weekly video guide and produces many interventions in the forum It is a phase where social presence prevails over the rest. | Video presentation<br>Weekly video guide |
| **Cycle 2 Unit 0- Initial though** | It is a phase focused on the exploration of previous experiences but with a little level of integration. | Video clip on YouTube *« New concepts for a new media education»* |
| **Activation and exploration phase** | | |
| **Cycle 3 Unit 1-Digital literacy and ubiquitous learning** | Interventions by the students where they use the knowledge acquired from the materials to debate two central themes of the course. | Video Unit 1<br>Weekly video guide<br>Burbules Videoclips<br>Self-assessment questionnaire |
| **Cycle 4 Unit 2–Social Exclusion** | There are open interventions by students that analyze the film from their previous professional perspectives without taking into account the meaning of the discussion on social exclusion. | Video Unit 2<br>Weekly video guide<br>Film «Lady Bird, Lady Bird»<br>Unit newsletter 1 and 2<br>Joomag<br>Self assessment questionnaire |
| **Integration and Resolution Phase** | | |
| **Cycle 5 Unit 3- Analysis of a case of digital literacy with groups at risk of exclusion** | Student interventions are reduced and interaction with the content is individualized; Interventions are made to share the analysis done and the interaction is made with the teaching team. | Video Unit 3.<br>Weekly video guide<br>Pinterest board<br>Didactic guide<br>Rubric to evaluation peer to peer<br>Newsletter Unit 3 Joomag |
| **Cycle 6 Unit 4-Designing a self-created digital literacy experience** | The number of student interventions is reduced and their interaction with the content is individualized; the interaction is done with the teaching team that values the material produced, emphasizing its positive aspects. | Video Unit 4<br>Weekly video guide<br>Pinterest Board<br>Didactic guide<br>Rubric to evaluate peer to peer<br>Newsletter Unit 4 - Joomag |
| **Cycle7: Final Unit-Evaluation of the course based on student satisfaction** | Interventions aimed at evaluating the course, more participation through the questionnaire than through the forum. | Evaluation questionnaire<br>Facebook forum for cousre evaluation |

The qualitative analysis allows us to confirm that in the activation phase there is a greater development of high-level critical thinking processes evidenced by the number of messages and the interactions between them as well as the level of the reflections and the interest of the contributions made by the students (texts, articles, documentaries, videos, and films, etc.)

The cognitive activation was favoured by a high presence of teachers, which is ratified by 97% of the students, who value the support received as satisfactory or very satisfactory, and also show high levels of satisfaction with the materials used in the course (videos, texts, digital resources, videoconferences, etc.). They are very satisfied with the involvement of the students and the opportunities the course provides for the development of their creativity (over 90%), 66% rate the interaction with colleagues as good or very good, 67% rate their colleagues' contributions as good or very good and 60% rate their colleagues' projects as good or very good.

# Conclusion

The data obtained allow us to affirm that the virtual community developed in the Facebook group for this MOOC course and the use of WEB 2.0 tools have enhanced networked social learning in what Garrison & Anderson (2005) call high-level learning. These results show that some limitations identified in the different studies on the quality of learning that takes place in MOOCs have been overcome (Bartolomé & Steffens, 2015).

Thanks to the organization and openness of the content, the design of the activities, the abundance of resources and materials, the type of technological tools used and the quality of the permanent teaching presence, this course develops an open and flexible curricular approach, an alternative to the main models in this field (Fernández, Rodríguez & Fueyo, 2014).

The results have also allowed us to detect weaknesses in the course that has to do with the fall in interactions at the times when the highest level of social learning should take place. Similar situations have been described in other studies on the subject (Moorison, 2014; Brinton 2014; Valverde, 2014; Garrison, Anderson & Archer, 2001) that place us before the need to go deeper into the reasons for these declines in social interaction.

We believe that these decreases are related with the fact that the activities proposed are of a very high level of demand (this may be related to 51% of students saying that the course requires a high level of dedication) and, also with deficiencies in the design of the activities that tried to promote this type of learning.

# References


Bartolomé, A.R., & Steffens, K. (2015). ¿Son los MOOC una alternativa de aprendizaje? [Are MOOCs Promising Learning Environments?]. *Comunicar,* 44(XXII), 91-99. doi: http://dx.doi.org/10.3916/C44-2015-10

Baxter, J.A. & Haycock, J. (2014). Roles and Student Identities in Online Large Course Forums: Implications for Practice. *The International Review of Research in Open and Distance Learning*, 15 (1), 20-40. (http://goo.gl/ytG0Ae) (12-02-2016).

Brinton, C., Chiang, M., Jain, S., Lam, Z., Liu, Z. & Fai Wong, F.M. (2014). Learning about social learning in MOOCs: from statistical analysis to generative model. *IEEE Transactions on learning technologies*, 7 (4) 346-359

Fernández, E., Rodríguez, C., & Fueyo, A. (2014). Concepciones pedagógicas y comunicativas de los MOOCs: estado del arte y prospectiva en el marco de un proyecto europeo. *III Workshop Internacional sobre creación de MOOCs con anotaciones multimedia*. Universidad de Málaga.

Flores, J. V., Cavazos, J., Alcalá, F.L., & Chairez, L. (2013). Los MOOCs: Una revolución para la transición a la Sociedad del Aprendizaje. *Scopeo Informe nº2. MOOC: Estado de la situación actual, posibilidades, retos y futuro*, 92-104. (http://goo.gl/Cf8bxd) (26-12-2016).

Gairín, J., & Muñoz, M.P. (2006). Análisis de la interacción en comunidades virtuales. *Educar* 37, 125-150. doi: http://dx.doi.org/10.5565/rev/educar.192

Garrison, D.R., & Anderson, T. (2005). *El elearning en el siglo XXI: Investigación y práctic*a. Octaedro: Barcelona.

Garrison, D.R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of Distance Education*, 15 (1), 7-23. doi: http://dx.doi.org/10.1080/08923640109527071

Kasch, J., P. van Rosmalen & M. Kalz (2017). A framework towards Educational Scalability of Open Online Courses. Journal of Universal Computer Science, vol. 23, no 9. 845-867.

Kop, R., Fournier, H., & Mak, J. (2011). A Pedagogy of Abundance or a Pedagogy to Support Human Beings? Participant support for Massive Open Online Courses*. International Review of Research in Open and Distance Learning,* 12(7), 74-93.

Rienties, B. (2018). The power of learning analytics to give students (and teachers) what they want! Inaugural lecture, The power of learning analytics for a better study experience. 30 January 2018, Milton Keynes, Open University UK https://profbartrienties.wordpress.com/2018/02/20/inaugural-lecture-the-power-of-learning-analytics-to-give-students-and-teachers-what-they-want-30-january-2018/

Valverde, J. (2014). MOOC: Una visión crítica desde las ciencias de la educación. *Revista de curriculum y formación del profesorado*, 18 (1), 93-111 (http://goo.gl/l3mfZl) (22-02-2016).

*Alastair Creelman*
*Linnaeus University, Sweden*

**Gabi Witthaus**
*University of Birmingham, UK*

# Facilitated MOOC support - closed bubbles in an open sea

## Innovative impact

Many of the people who could gain most from open online education lack the necessary study skills and digital literacies to participate effectively. Although most MOOC providers offer some online support services, they cannot provide personal, face-to-face support. Many people are unfamiliar with the principles of online learning and need practical support and advice from a trusted mentor or friend to learn effectively. By forming local support groups, various organisations and communities can provide that vital support to give learners the skills and confidence needed to complete an online course.

In the long term there are signs that new learning eco-systems are growing around MOOCs and this can enable more people to benefit from open education in the future.

## Introduction

A frequently voiced criticism of MOOCs is that they attract digitally literate graduates rather than learners who would most benefit from open education. Possible reasons for this include lack of awareness of open education, low levels of digital literacy, lack of experience of online learning, language issues, and lack of independent study skills. Those who do participate may find the massive and open nature of MOOCs overwhelming. This chapter looks at ways in which third-party organisations are offering structured social interaction and support for MOOC-based learning, both online and offline, with reference to a growing body of literature in this area.

### *MOOC Meetups*

There are many reported instances of MOOC learners organising themselves into self-help groups to discuss course issues, technical problems and get moral support. For example, the IDCourserians group, based in Indonesia, organise local support communities with face-to-face Meetups, online discussion and a Facebook group (Firmansyah & Timmis 2016). Through these networking activities, a wide community of practice has formed, independent of any particular MOOC or MOOC platform. Participants reportedly appreciate the support of their peers, and the sense of community developed by this initiative. In the USA, an ethnographic study on P2P University Learning circles (Damasceno, 2017) showed that learning circles reduced the digital divide and provided a supportive learning environment for learners to gain confidence and develop their own online learning strategies.

A study of over 4,000 MOOC-related events in 140 countries by Bulger et al (2015) found that, while meetups generally tend to focus on course-related activity, there was greater emphasis on social and professional networking in developing countries than industrialised countries. They speculate that this is because learners in developing countries do not find a critical mass of peers on the same courses in their local areas.

There is evidence that informal support groups contribute positively to retention rates on MOOCs. Brooks et al. (2015) found that learners signing up for a MOOC with friends or family members correlated positively with levels of course completion, achievement and discussion forum usage. Damasceno (2017) found that P2P Learning Circles running in public libraries across Kenya had remarkably high retention rates among learners with no previous experience of online education. Coursera, which has teamed up with a number of local organisers to

## Best practices

MOOC Meetups is a social networking platform for MOOC learners who want to meet up with other learners in their local area.

MOOCLab's service, Find a study buddy, allows learners to team up with other learners studying the same course or the same subject at a similar level of study. This platform is not exclusively for MOOCs but offers a lifeline to otherwise isolated learners.

In 2015 a number of German adult education institutions (Volkshochschulen) ran a course called ichMOOC to explore personal online representation. To strengthen learner participation, 'MOOCbars' were introduced in several towns to gather MOOC participants to regular on-site meetings for further discussion of the issues raised by the MOOC.

The P2P University (P2PU) offers learning circles – study groups for people who want to take MOOCs together, in person.

RLabs in South Africa offers free, specialised skills training courses to the local community, and provides local support for UCT's Changemaker MOOC.

MOOCs4inclusion is a study, commissioned by the European Commission, the Directorate General Joint Research Centre (DG JRC), which aims at assessing the adequacy (mapping and analyzing) of Massive Open Online Courses (MOOCs) and Free Digital Learning (FDL) for inclusion of migrants and refugees.

The inZone MOOCs4Peace Centre, founded by the University of Geneva, offers local support to form Learning Hubs where learners can meet and interact, reports that participants show significantly higher completion rates, ranging from 30 to 100%, compared to the 6.8% Coursera-wide average.

## *Wrapped MOOCs*

In wrapped MOOCs, the online MOOC is supplemented by regular classroom or online meetings, arranged by a third-party educational institution. Learners participate fully in the MOOC and are also able to discuss concepts and issues arising from the MOOC in local (or online) groups, often in their own languages. The MOOC is thereby given local relevance, and the learners can discuss in a safe and supportive environment that enable open courses to be more inclusive and improve the likelihood of course completion for these learners. One successful example is the University of Cape Town's MOOC, 'Becoming a Changemaker: Introduction to Social Innovation', which is run as a wrapped MOOC by a local non-profit organisation called RLabs, which aims to empower members of disadvantaged communities in Cape Town to become social entrepreneurs.

Another innovative approach to wrapped MOOCs was a pilot study in northern Sweden where MOOCs were offered to unemployed learners with support from local learning centres (Norberg et al 2015). This support was in the form of local study groups who met together with a tutor to discuss course content in Swedish, and if possible, link up with local experts in the field as well as a subject expert at the university. At the end of the course they had the option of examination and university credits. The target group would probably not have been able to complete an online course without this form of support.

Several proposals have also been made regarding models for designing MOOCs to expressly enable support for local, facilitated groups. An option for MOOC providers could be to facilitate locally wrapped courses by providing teacher guides in a variety of languages with lesson plans, extra resources (free to adapt) and guidelines. Sanchez-Gordon & Luján-Mora (2015) propose an 'architecture for accessible blended learning' using MOOCs, involving a loose partnership of learners (who in their scenario are non-native speakers of English), local instructors and MOOC authors. The learners meet in local study groups, guided by local instructors, using materials produced by the MOOC authors in a variety of alternative formats. Laurillard & Kennedy (2017) present a cascade model for MOOCs whereby a local teacher signs up for and fully participates in a MOOC whilst simultaneously teaching a local class on-site and adapting the course to local issues. Teacher guides and resources would be provided. The cascaded class would not be directly involved in the MOOC but would benefit from their teacher's participation in it.

## *Support for refugees in MOOCs*

Research points towards the importance of face-to-face networking around online learning for refugees. Colucci et al. (2017) found that, whilst a wide array of free digital learning resources were available for refugees in Europe, blended and facilitated learning support involving

MOOC learners in refugee camps in Kenya.

Kiron is a non-governmental organisation Germany, which offers refugees five 'study tracks' with pathways through selected MOOCs in English and German.

MOONLITE is an Erasmus+ project that aims to develop cross-national cooperation services to explore larger-scale uptake of MOOCs in Europe as well as creating learning and collaboration opportunities for refugees, stakeholders and MOOC providers in member states.

In 2016/17 the Catholic University of Louvain offered refugees in the local area the opportunity to attend regular classes for MOOCs, as well as technical support and individual tutoring.

Webinar recording: Facilitated MOOC support – closed bubbles in a sea of openness by Alastair Creelman & Gabi Witthaus, 14 May 2018. Many people are unfamiliar with the principles of online learning and need practical support and advice from a trusted mentor or friend to learn effectively. This webinar presented a selection of solutions to this issue, such as MOOC Meetups, wrapped MOOCs and support services for refugees.

face-to-face mentoring or guidance were optimal. This finding was echoed elsewhere, with Syrian refugees in refugee camps in Jordan saying that online education alone denied them the life skills they would gain through the campus experience (Bothwell, 2017). Female refugees are at particular risk of losing out on higher education in the absence of local, facilitated support (Locke, 2017; Bothwell, 2017).

There are several examples of support groups for MOOC learners in refugee camps. The aid agency CARE International offers weekly 'MOOC screenings' in a refugee camp in Jordan (Bokai, 2017), to help refugees there prepare for future employment. They have also found that offline meetups led to better learning. Crea (2015) reports on a four-year pilot of the Jesuit Refugee Service's provision of local classroom support for online higher education programmes in refugee camps. Positive impacts were reported, with graduates going on to serve their local communities in new ways. The inZone MOOCs4Peace Centre helps learners in a Kenyan refugee camp to gain conflict resolution skills through locally facilitated MOOC study and workshops (Moser-Mercer, 2014).

Another model for supporting refugees has emerged in Germany: Kiron Open Higher Education offers a programme of curated MOOCs to refugees, along with support from volunteer tutors and mentors. The credits achieved by refugees in this way are recognised by some German Higher Education Institutions. Early findings indicate that offline, face-to-face support plays a critical role in the retention and success of Kiron learners (Suter & Rampelt, 2017).

# Conclusion

Inexperienced online learners who want to benefit from the opportunities offered by open education may need to first establish a secure and supportive group of colleagues - ironically, the key to participation in open education is a safe, secure and restricted base where they can discuss course content with trusted peers in their own language and apply the lessons to a local context. These 'safe bubbles' can be either closed online groups or physical meetings, organised by the learners themselves (from book circles to MOOC circles) or by third parties such as libraries, community centres or local education institutions. A filter bubble can sometimes be positive!

# References


Bokai, D. (2017). Insights from using Massive Open Online Courses (MOOCs) in Refugee Camps. Retrieved Feb 5, 2018, from https://goo.gl/HUvnqe

Bothwell, E. (2017). Online higher education "unappealing" for Syrian refugees. *Times Higher Education.* Retrieved Feb 5, 2018, from https://goo.gl/LG6m7A

Brooks, C., Stalburg, C., Dillahunt, T., & Robert, L. (2015). Learn With Friends: The Effects of Student Face-to Face Collaborations on Massive Open Online Course Activities. In *Proceedings of L@S 2015* (pp. 241–244). Vancouver: ACM. http://doi.org/10.1145/2724660.2728667

Bulger, M., Bright, J., & Cobo, C. (2015). The real component of virtual learning: motivations for face-to-face MOOC meetings in developing and industrialised countries. *Information, Communication & Society*, *18*(10), pp. 1200–1216. http://doi.org/10.1080/1369118X.2015.1061571

Colucci, E., Smidt, H., Devaux, A., Vrasidas, C., Safarjalani, M., & Castaño Muñoz, J. (2017). *Free Digital Learning Opportunities for Migrants and Refugees: An Analysis of Current Initiatives and Recommendations for their Further Use*. Luxemburg. http://doi.org/10.2760/684414

Crea, T. M. (2015). Higher education for refugees: Lessons from a 4-year pilot project. *International Review of Education*, *61*(2), 229–239. http://doi.org/10.1007/s11159-015-9484-y

Damasceno, C. S. (2017). Massive Courses Meet Local Communities: An Ethnography of Open Education Learning Circles. Raleigh, NC. Retrieved Feb 5, 2018, from https://goo.gl/B15beq

Firmansyah, M., & Timmis, S. (2016). Making MOOCs meaningful and locally relevant? Investigating IDCourserians—an independent, collaborative, community hub in Indonesia. *Research and Practice in Technology Enhanced Learning*, *11*(11), 1–23. http://doi.org/10.1186/s41039-016-0032-6

Laurillard, D., & Kennedy, E. (2017). *The potential of MOOCs for learning at scale in the Global South* (Working paper series No. 31). London: Centre for Global Higher Education. Retrieved Feb 5, 2018, from https://goo.gl/EyDejn

Locke, A. (2017) 'The Education Information Gap Facing Syrian Women Outside Syria', *News Deeply*, August. Retrieved Feb 5, 2018 from https://goo.gl/d6US5H

Moser-Mercer, B. (2014) 'MOOCs in fragile contexts', in *Proceedings of the European MOOC Stakeholder Summit 2014*. Lausanne: eLearning Papers, Open Education Europa, pp. 114–121.

Norberg, A., Händel, Å., & Ödling, P. (2015). Using MOOCs at learning centers in Northern Sweden. *International Review of Research in Open and Distance Learning*, *16*(6), 137–151. http://doi.org/10.19173/irrodl.v16i6.2035

Sanchez-Gordon, S., & Luján-Mora, S. (2016). Accessible blended learning for non-native speakers using MOOCs. In *Proceedings of 2015 International Conference on Interactive Collaborative and Blended Learning, ICBL 2015* (pp. 19–24). Mexico City. http://doi.org/10.1109/ICBL.2015.7387645

Suter, R. and Rampelt, F., (2017). Digital Solutions for Alternative Routes Into Higher Education – Possibilities and Challenges of Digital Teaching and Learning Scenarios for Refugees: First Results From the Integral² Project. In: *Proceedings of EDULEARN17 Conference 3rd-5th July 2017, Barcelona, Spain*. pp.4640–4645. Retrieved Feb 5, 2018, from https://goo.gl/B7CdmX

*Christian Friedl, FH JOANNEUM*

*Thomas Staubitz, HPI*

# Corporate MOOC Trends

## Innovative impact

The article outlines five findings and seven key trends for (potential) corporate MOOCs based on a recent study and the evaluation of pilot runs of three corporate MOOCs in 2017 and 2018.

MOOCs and their digital successors could become a game-changer in business education and disrupt the way how companies grow talent and employees improve career pathways.

## Introduction

MOOCs have started to be employed not just within higher education systems, but also within the corporate context. Examples are training of employees, human resource development, recruiting, marketing, and even brand awareness (Grossman, 2013; Iversity, 2015; Radford et.al., 2015; Renz, Schwerer, Meinel, 2016; Sreeleakha and Manikandan, 2015). In addition, MOOCs have the potential to support the development of labour market-relevant skills (CEDEFOP, 2014; Calonge and Shah, 2016; Patru and Balaji, 2016). As there was no further research conducted on the identification of main potentials and barriers of MOOCs in the business community at European level, a EU-funded research project (BizMOOC, see: http://bizmooc.eu) has been launched.

### *Perception, potentials and challenges*

In the first phase of the project, 56 business representatives across eleven European countries were interviewed and 1.193 potential MOOC learners took part in a survey to analyse the perception, potential and challenges of MOOCs for European companies across 4 dimensions: (1) awareness and perception of MOOCs; (2) involvement in online and MOOC activities; (3) expectations, reasons, benefits and barriers to engaging with or creating MOOCs; and (4) opportunities and interest for collaboration with other institutions.

**Five key findings**

- **MOOCs are not mainstream in the corporate world**. The level of familiarity of EU companies with the MOOC concept is still rather low. While almost three quarters of the organisations interviewed were applying some sort of online professional development (especially in Western European countries), a low percentage of the interviewed organisations (less than 20%) have been involved in specific MOOC-related activity.
- **MOOCs are primarily recognised as Human Resource Development and training tool**. The main benefits of MOOCs are seen in relation to their application within HRD (including building a talent pipeline, on-boarding and recruitment) and as a customer training which is also in line with the literature reviewed. Marketing is seen as additional benefit, but only as a positive side-effect.
- **MOOCs work best as complementary education tool**. There was a higher potential seen in offering MOOCs to complement existing educational resources of the companies instead of replacing traditional approaches. This is also in line with a study conducted by McPherson & Bacow (2015).

## Best practice

**Corporate MOOC on Intrapreneurship**

Entrepreneurship is a buzzword of the new century, but not everyone is a born entrepreneur. Yet innovation and entrepreneurship also take place within companies ("Intrapreneurship") with the engagement and dedication of open-minded entrepreneurial employees.

To unleash this potential among employees on a larger global scale, four partners from university and industry teamed up to offer the first Massive Open Online Course (MOOC) on Intrapreneurship.

The content of the course covered a clarification of the intrapreneurship concept, outlined its opportunities for companies and employees, and introduced an intrapreneurship toolbox. Almost 3,000 business learners from 98 different countries and cultures enrolled so far, to discuss the potential and applicability within their environment, and jointly worked on own intrapreneurial ideas throughout the course.

The MOOC offered flexible learning pathways and certification options to meet the diverse target group needs such as a fast track for people with limit time or a full track including an interactive pitch development team exercise.

The whole course was designed and moderated applying an adapted version of the *Learning Design* concept by the Open University UK and e-*moderation and e-tivity concepts* by Gilly Salmon. The learners of the course, external experts and other MOOC developers provided

- **MOOCs face (too) high expectations**. Managers and employees expect from MOOCs to provide better networking opportunities, save costs, modernize education, provide up-to-date and high quality knowledge, develop new competencies, improve employee retention rates, increase flexibility etc. Some interviewees stated that e-Learning was already sold too many times before as new epiphany to companies and employees, but could not meet the expectations. So we should be very realistic and careful what to promise with MOOCs.

- **MOOCs face administrative and inexperience barriers**. There have been many unsolved questions documented with regards to legal limitations, confidentiality issues (e.g. do companies monitor their employee´s learning results, how are company-secrets treated etc.) and technical issues (starting with a simple company firewall). Next, unawareness and lack of experience hinder companies from entering the MOOC market. This potentially opens the door for collaboration with MOOC-experienced institutions which is already happening (examples are openSAP & openWHO, Udacity & Google or Deutsche Telekom & Cadena).

## *Corporate MOOC Trends*

Based on the findings of the study, three MOOCs were designed, implemented and evaluated in the timeframe of October 2017 to May 2018. The courses tackled business-related topics around three European LLL key competences (Learning to learn with MOOCs, Idea creation, and Entrapreneurship). All three were offered on different European platforms (OpenLearn, UniMOOC and mooc.house), and applied different designs and didactical approaches (self-paced or scheduled start and end, from non- to fully-moderated). Feedback was gathered by 55 business and university experts and over 1.000 learners in pre- and post-course surveys in the courses. In addition, the MOOC production teams applied a peer evaluation scheme and two external evaluators reviewed the course design. The evaluation approach was monitored by an external quality assurance board consisting of seven MOOC experts.

At the time of writing this article, the three MOOCs have been completed, but the meta evaluation is not fully completed. However, the following key trends can already be derived when contrasting the study findings with the preliminary evaluation.

**Seven key trends for corporate MOOCs**

1. **Employees prefer to learn private**. At least 15 companies recommended the MOOCs to their employees, but we had very few enrolments done with an official company email address – still, approximately 2/3 of the learners were employees according to our course surveys. This indicates that companies are slowly opening up to MOOCs, but their employees tend to learn private and self-determined. This might change, if companies offer more incentives to their employees to take a MOOC (e.g. as part of their working time), which was not the

extended feedback before and after the course. The preliminary evaluation is highly positive, 93% of learners would recommend the course to others and the completion rate passed the 20% mark which is above MOOC average completion rates.

The moderated version of the courses has started on the 26th of February 2018 and lasted – depending on the chosen course option – between 4 and 7 weeks. The course stays available for participation as self-paced version. Participation and all types of credentials are free of charge.

Course Link:
https://mooc.house/bizmooc2018

case in the pilot runs.

2. **Solving the unsolved**. This "bottom-up participation" solves barriers. By moving the ownership and responsibility for the MOOC away from the company, many administrative key barriers identified in the initial study – such as technical issues or legal constraints – become obsolete. The same is true for wrong expectations, as the MOOC is not an official company HR offer and the employees have the freedom to take a MOOC or not. Of course, all these issues stay unsolved if companies produce and offer their own MOOCs instead of using external ones.

3. **Unawareness stays, but perception becomes higher**. The huge potential to use MOOCs as complementing offer was not fully confirmed by the pilot runs. The approached companies showed large interest, but many of the HR managers preferred to collect their own experience first, before fully "trusting MOOCs" and eventually recommend MOOCs as official company offers.

4. **Observe your pro-active employees**. This leads to the next finding. Experts mentioned that companies which are outsourcing training offers are asking for complete packages including a competence matrix. They simply do not take the time and responsibility to search for freely available MOOCs, evaluate them etc. In addition, experts indicated that in many cases, decision-makers in established companies are not digital natives themselves and that it needs the right strategy to convince them.

5. **Go with established channels**. The previous finding addressed external MOOCs. Even less companies and HR managers dare to create an own MOOC. If considering this, we collected the experience that it is much easier to design the course, provide the quality requested (professionalism a must – business learners are even more critical than students) and reach a critical mass of learners when going with an established platform and collaborate with a professional partner. This does not necessarily need to be one of the major global platforms as our pilot runs showed.

6. **Flexibility is key, moderation can help**. We experimented with flexible pathways to cater the diverse needs of business learners, especially their time constraints. E.g. for those with limited capacities, a fast-track and separate course certificate was offered. This was highly appreciated and motivated learners to go for the full track. But learner engagement can sometimes also be improved with simple changes. E.g., carefully consider when to publish new content respecting working times, holidays and corporate schedules. In addition, we ran experiments with unmoderated and moderated team assignments. The moderation encouraged the discussions of (already active) learners, but did not necessarily turn un-active learners into active ones.

7. **Corporate UnMOOCification**. In line with overall developments in the educational landscape, many MOOCs are not MOOCs per definition any more. We see company-closed MOOCs, MOOC offered with freemium business models, and a strong shift towards shorter, modular versions (Micro, Nano). Some experts mentioned that completely "for free" could even become mixed up with "worthless/low quality". This is complemented with a growing scepticism towards "allegedly free" online offers.

# Conclusion

Some findings of our initial study have been confirmed by our field experiments, although the initial research phase had a stronger focus on the company-perspective than the pilot runs. MOOCs are still not broadly perceived in the corporate world, unawareness is still a considerable factor and administrative challenges stay, but only when speaking about a "top-down self-production" approach. There lies huge potential in the interface between external MOOCs and company HR programmes, if the design of such offers cater a corporate audience (flexible, modular and adaptable to company training offers including a competence matrix). Corporate MOOC learning is also identified as key trend by a recent Class Central study (Shah, 2018). The potential of MOOC as complementing corporate training offer has not been fully realized yet, but this also opens up interesting fields of collaboration between the educational and business sector.

The key trends derived will be further investigated, analysed and specified. There needs to be more differentiation between target groups, external and self-produced MOOCs and additional validation. Further findings and results will follow throughout 2018 and will be published on the project´s platform: http://mooc-book.eu and relevant conferences.

# References


Grossman, R. (2013). Are Massive Online Courses in Your Future? Organizational and Employee Development Special Report, SHRM.

Iversity (2015). KPMG und iversity: Online-Kurs zur Zukunft der digitalen Weiterbildung.

McPherson, M. & Bacow, L. (2015). Online Higher Education: Beyond the Hype Cycle. Journal of Economic Perspectives, 29(4), 135-154.

Patru, M., Balaji, V. (2016). Making Sense of MOOCs. A guide for Policy-Makers. United Nations Educational, Scientific and Cultural Organization (UNESCO), Fontenoy, 75352 Paris 07 SP, France.

Radford, A.W., Coningham, B., Horn, L. (2015). MOOCs: Not just for college students-How organizations can use MOOCs for Professional Development. Employment Relations Today, 41(4): 1-15.

Renz, J., Schwerer, F., Meinel, C. (2016). openSAP: Evaluating xMOOC Usage and Challenges for Scalable and Open Enterprise Education, ICELW 2016 Proceedings.

Shah, D. (2018). MOOC Trends in 2017: Online degrees and corporate learning", Class Central, derived from https://www.class-central.com/report/mooc-trends-online-degrees-corporate-learning/

Sreeleakha P., and Manikandan, N. (2015). The Way Forward with MOOCs – Professional Development Perspectives. American International Journal of Research in Humanities, Arts and Social Sciences, 15-514: 29-32.

**Christoforos V. Karachristos,**
**Fotis Lazarinis,**
**Elias C. Stavropoulos and**
**Vassilios S. Verykios**
***Hellenic Open University***

# A MOOC design methodology for enhancing school teachers' ICT skills

## Innovative impact

We propose a methodology for designing a MOOC, aiming to facilitate trainees to acquire adequate skills to become trainers in turn, multiplying by this way the benefiting population. The proposed methodology is applied to develop a course for enhancing school teachers' ICT skills. Primary and Secondary education school teachers have the pedagogical training and competence to migrate their knowledge to their students in schools, thus, they form a suitable target group for evaluating our methodology. The level of assistance and feedback provided to participants was twofold (subject area tutoring and distance learning support) to help out the learners and to increase the completion rate of the course. The MOOC was implemented on a Moodle platform, incorporating various types of resources and activities. The educational process was evaluated by the participants by filling out questionnaires. Learning analytics dashboards were also utilized for a holistic view of participants' activity and an overall evaluation of the content.

## Introduction

A main concern of the Hellenic Open University (HOU) in Greece, regarding lifelong learning, besides the development of MOOCs of "general interest" that are freely offered to the public, is the provision of a "know-how" mechanism for course creation and course management support to specific interested groups of people. Specifically, the Educational Content, Methodology and Technology Laboratory (e-CoMeT Lab) of HOU provides all the necessary mechanisms and support to anyone interested in course creation, to develop courses and training for their targeting audience. Instructional designing experts and experts in distance education can provide their knowledge on course designing and development. The e-CoMeT Lab's infrastructure includes various LMS platforms, a variety of authoring tools for educational material development, as well as a video production and processing studio. Moreover, learning analytics tools are available, so that valuable information concerning the participants' activity, the educational material and the learning process to be extracted. The above constitutes an ecosystem for assisting instructors with lack of experience to create and offer their courses.

We next discuss a step-by step process for development and provision of such a targeted MOOC to the school teachers of primary and secondary education. Our aim is to assist teachers to acquire a solid understanding of basic programming concepts that are common in all programming languages, and hence to enhance their ICT skills. They, in turn, will be able to migrate the knowledge to their students in classroom, multiplying the benefit. This attempt was under a project, funded by the Stavros Niarchos Foundation. In what it follows, we present the design principles of the project, the pedagogical approach, the instructional methods, the implementation period and the results of a user opinion survey.

## Purpose

The underlined idea was to train a significant number of school teachers who will in turn transfer their skills to their students in classroom, multiplying the benefited population. Educating the teachers using asynchronous online material and practical assignment using a MOOC would increase the number of participants. The teachers would become trainers who would use the training material and the training platform in turn. One of the main objectives was, therefore, to create an adaptable course suitable for re-use. At the same time, the aim was to train teachers and use the platform. Next, we had to select appropriate learning objectives for the course. Since "computational thinking" is a

## Best practices

The need to upgrade the knowledge and skills of ICT of the educational community in Greece in the last 2 decades, is approached through the project "Teacher Training for the Use and Application of Digital Technologies in Teaching" which is implemented by the Hellenic Ministry of Education and its main purpose is the education of all primary and secondary education teachers on ICT tools. The implementation of the training refers to two levels of knowledge and skills: Introductory Training for Educational Utilization of ICT (36 teaching hours) and advanced training for the exploitation and implementation of ICTs in teaching instruction (42 teaching hours). In order to meet the training needs (e.g., large dispersion of potential trainees), the training is based on a blended learning model in which a set of face-to-face and distance meetings is implemented. Four clusters of "related" teacher classes are planned for the initial training and, consequently, the development and implementation of four distinct seminars per level of training, while for the upper training level, more clusters (12-13 clusters) and equally distinct courses are envisaged. The lessons are conducted in groups of 10-15 people, in three-hour online sessions, generally once a week, by trainers who belong to a special Registry of Teachers and who have emerged from previous trainings on the same courses. For more information, visit the website of the project (http://e-pimorfosi.cti.gr).

Recently, a similar project was designed and developed by the the Educational Content, Methodology and Technology Laboratory (e-CoMeT Lab) of the Hellenic Open University (HOU)

basic skill that should become an integral part of every child's education, we decide to develop a course that will improve the coding abilities of teachers through visual block programming languages, like Scratch. Blocks-based programming is easy due to the natural language description of the blocks, the drag-and drop interaction, and the ease of browsing to the available commands (Weintrop Wilensky, 2015). We concentrated on Scratch, since it has been used in many projects realized from Universities for secondary education students and teachers.

# Design methodology

Resent research has shown that MOOCs have a low completion rate due to the lack of student support (Onah et al., 2014), the low teacher to student ratio (Guo & Reinecke, 2014) and the lack of interaction among the participants (Eriksson et al., 2017). Thus, we decided to design and implement a course with increased support and interaction with the learners. A blended learning approach, where the instructional process comprises of face-to-face meetings, online asynchronous video lectures, synchronous sessions and focused support to the participants via discussion fora and email, is thus preferable. This approach would allow us to teach an acceptable number of teachers, mainly in distance, and still have the overall control of the process. After having performed an analysis phase, we concluded that the system under development should meet several core functional requirements. The modularity of the course, the aims and prerequisites, the resources and the activities of each learning module, the face-to-face meetings, the synchronous and asynchronous manner of users' support, the certification of attendance, the users' enrolment process and the necessity for running the course in streams of small groups of participants in order to maximize the level of support, are some of them.

Based on these, we designed a modular course in Moodle, called "Scratchcoding: Code-Create-Play with Scratch". The educational material consists of learning objects, organized into larger units of related topics, which in turn form the e-course. Each learning object contains specific objectives, required knowledge, teaching material in video and textual forms, and activities, quizzes, and exercises which require users to run, and to complete coding blocks or to develop full applications. Links to other resources are also part of a learning object. The modular architecture of the educational content increases its reusability, shareability, and scalability.

The instructional methods applied within a learning object are 'learning by example' and 'problem solving'. The videos discuss and explain specific examples with step-by-step instructions and provide analytical explanations of the functions of the visual blocks, the characters and the rest of the structural elements of a Scratch story. Trainees acquire the expected skills by repeating the examples which can be run in the online or the offline Scratch versions. The video lectures act as facilitators promoting self-learning helping learners to develop critical thinking skills. The try-out exercises, the quizzes and the assessment activities increase the active participation of the learners and follow a 'problem solving' approach. Easy or more difficult problems are posed,

with the collaboration of Intermedi@KT, a Non-Profit Organization in Greece. The project, named Junior Coding Academy, is an attempt to empower and assist the forms of non-typical education of teachers and students of the Greek educational system. An e-learning moodle platform was implemented, offering courses for scratch programming, scratch game development and scratch programming for the Arduino microcontroller. The target group was school students, aged from 10 to 16, coming from various socioeconomic backgrounds, mainly from rural areas, at least 60% being girls and at least 15% being refugee/migrants children. The structure of each course followed the topics format, each of them being a distinct educational part of a wider curriculum, subdivided into subtopics with online tools, video presentations and multiple activities. Initially, school teachers had to be familiar with the weekly learning objectives of the course and next to reuse the educational material in the classroom with his students either through the predefined learning path that the instructors of the e-learning platform suggest or in a free manner, adapting them to the needs and the understanding of the class. For more information, visit the website of the project (http://juniorcodingacademy.gr).

A common pitfall of e-learning courses, especially those with scientific and engineering content, is the lack of access to physical laboratorial equipment. Hence, usually students are trained and graded based on simulation tools. To combat this recent projects aim to develop virtual and remote laboratory facilities that can partially cover the above gap. In which require specific and measurable actions on behalf of the learners. These scaffolding activities improve gradually the coding skills of the learners and help them promote their computational thinking. To further help the participants, some of the activities have a solution attached which could be used in case someone cannot further progress. A detailed description of the methodology is given in Lazarinis et al. (2018)

## Running the course in streams

The course was designed to run in different streams with a manageable number of learners. Each stream starts with a face-to-face meeting with the participants, where the aims of the outreach program and the teaching methodology are explained, and the learning platform and other tools needed are demonstrated. These direct instruction meetings host 25-30 teachers and about 4-5 meetings per stream occurred, related to the number of participants in each stream. Some synchronous meetings with optional attendance take place during the course, to discuss any issues and to motivate the learners. Communication through email and forum is another way which supports participants. Peer assessment is also available for most of the activities.

Each stream lasted 2 months. The main purpose was to train teachers from remote and rural areas which have less training opportunities. From 2,357 applications in total, we selected 860 teachers, according to their application time, their specialty and their gender, thus we maintained an equal distribution between women and men and among the various specialties (e.g., primary education teachers, mathematicians, literature teachers, etc.). Of these who have been enrolled to the course, 243 have never started the course and finally 559 completed the course and received their free certification of achievement. Counting the success based on the registered teachers, or on the actively participated teachers, we had a completion rate of 65%, or to 90,6%, i.e. a completion rate quite higher compared to the rates reported in the literature.

After completing of their training, a small number of teachers transferred their knowledge to their students in classrooms. 271 students have already been taught running selected applications from our material and have created 39 new Scratch short applications, as reported to us. We expect this number to increase significantly by the end of the school year.

## Course evaluation and learning analytics

At the end of each steam, the participants had to fill out an anonymous questionnaire to complete the course. Most of the questions were in a five-Likert scale. The participants have found the course interesting, easy to follow and with substantial support by the organizers. Most of the participants were not aware how to program in Scratch or how to program at all, and the clear majority agreed that after attending the

Europe the largest projects in this direction include Go-Lab (Global Online Science Labs for Inquiry Learning at School, http://www.go-lab-project.eu), the Cloud E-learning for Mechatronics – CLEM, the MIT iLab Remote FPGA & CPLD Laboratory, and the Online Lab created by the Ilmenau University of Technology. Driven by the same requirements, the Digital Systems and Media Computing Laboratory (DSMC) of Hellenic Open University (HOU) has developed an Arduino remote Lab for the needs of a distance learning course on microcontrollers as well as an open remote FPGA Lab (http://dsmc2.eap.gr/?page_id=1013) that can support training curricula on the topics of digital system design and embedded systems in the context of both formal and informal education. Thus, via a single web-interface the participants can experience real system behaviour of their experiments, avoiding overly abstract, unnatural-looking graphs and GUI widgets, while at the same time train at using state-of-the-art equipment and acquire hands-on practice on programming and system design skills.

course, they can now develop programs in Scratch, and use it in the school lessons. Regarding the educational material, all the participants had a positive or very positive opinion. They also identified the most positive and the most negative aspect of the course and suggested changes and additions. More evaluation results can be found at Lazarinis et al. (2018).

Moodle platform can offer a holistic view of participants' activity and an overall evaluation of the content, by setting up and utilizing learning analytics dashboards (LADs), i.e., certain plug-ins for visualizing the analysis results obtained by the logging records. Using LADs, a course designer or an instructor can have direct feedback related to participants' progress, dedication and engagement, forum participation, access to the educational material and external resources, submission of assignments and quizzes, etc. The reader is referred to the recent papers of Gkotzis et al. (2017) and Alachiotis et al. (2017) for further reading.

# Conclusion

We proposed a methodology for designing a MOOC in Moodle, for assisting primary and secondary education teachers to acquire adequate programming skills, so that they, in turn, to be able to distribute their knowledge to their students in classroom and thus to multiply the benefiting population. The MOOC was run in streams, with a manageable number of trainees at each stream, having a high level of assistance and feedback, so as assist the learners and to increase the completion rate of the course. Questionnaires and learning analytics dashboards were utilized to evaluate the platform, the content and the learning process.

# Resources


Alachiotis, N.S., Stavropoulos, E.C., and Verykios, V.S., (2017). Learning Analytics with Excel in a Blended Learning Course. In Proc. of ICODL2017, 9(4A):8-18, November 2017, Athens, Greece.

Eriksson, T., Adawi, T., and Stöhr (2017). Time is the bottleneck": a qualitative study exploring why learners drop out of MOOCs. *Journal of Computing in Higher Education* 29(1):29-133.

Gkontzis, A.F., Karachristos, C.V., Lazarinis, F., Stavropoulos, E.C., and Verykios, V.S. (2017). Assessing Student Performance by Learning Analytics Dashboards. In Proc. of ICODL2017, 9(6B):101-115.

Gkontzis, A.F., Panagiotakopoulos, C.T., Stavropoulos, E.C., and Verykios, V.S. (2017). A Holistic View on Academic Wide Data through Learning Analytics Dashboards (2017). In Proc. of the EADTU annual conference 2017), pp. 12-27, ISBN: 978-90-79730-29-2.

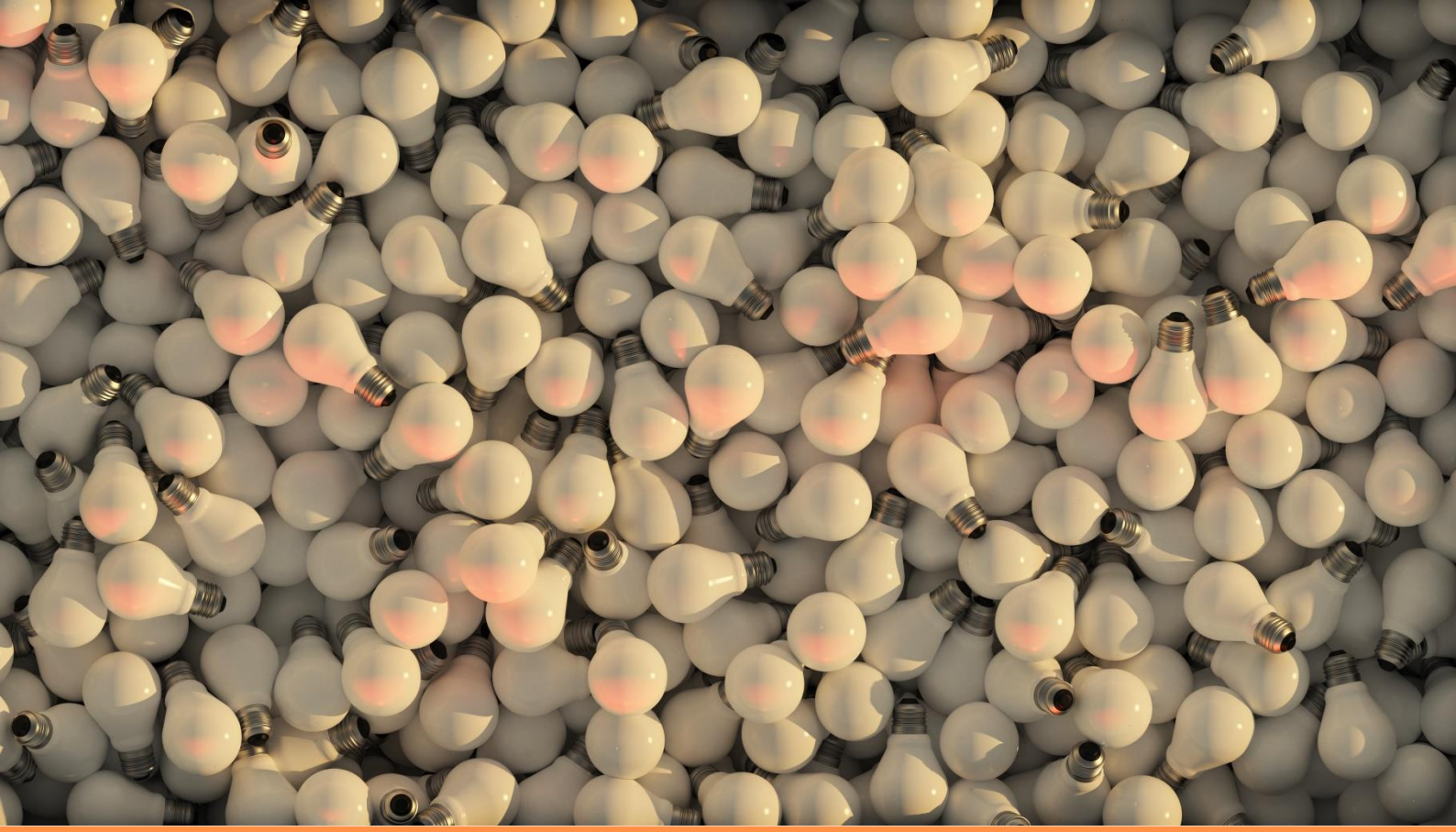
Guo, P.J., Reinecke, K. (2014). Demographic differences in how students navigate through moocs. In *Proc. of* L@S 2014, 21–30.

Lazarinis, F., Karachristos, C.V., Stavropoulos, E.C., and Verykios, V.S. (2018). A blended learning course for playfully teaching basic

programming concepts to school teachers. Submitted.

Onah, Daniel F. O., Sinclair, J., & Boyatt, R. (2014). Dropout rates of massive open online courses: behavioural patterns. In *Proc. of* EDULEARN14, 5825-5834.

Weintrop, D. and Wilensky, U. (2015). To Block or not to Block, That is the Question: Students' Perceptions of Blocks-based Programming. In *Proc. of the 14th Int. Conf. on Interaction Design and Children*, 199-208.



OpenupEd

ISBN/EAN: 978-90-79730-33-9